sputnik

MONTHLY DIGEST

December 1968

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CONTENTS

PHOTO AND PICTURE CREDITS: Front cover, Boris Ushmaikin, Sergei Solovyov. p. 27 Anatoli Grunin, 31 Yuri Cherepanov, 37 Vitali Peskov, 32-36 Vladimir Nikitin, 76-77 Robert Silin, 78-91 Yuri Tumanov, 92-93 Yevgeni Uspensky, 94-111 Victor Panov, Akop Ekekyan, 112-119 Victor Panov, 120-133 Dmitri Donskoy, 134-161 Boris Kudoyorov, 162-176 Irina Stin, Stanislav Zimnokh, 177-184 Nikolai Kulichkin.

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LETTERS TO THE EDITOR

Please keep up the articles about the various Socialist Republics. I enjoyed the one about Latvia in the July issue.

Is there any chance of historical articles about Russia from ancient to modern times?

James Ronald Patton, Glasgow, Scotland.

SPUTNIK has always made a point—and will continue to do so—of carrying articles on historical and geographical topics.

It would be interesting reading to find in any of your future issues of SPUTNIK an article depicting the Soviet view on rendering economic aid to the developing nations.

Farugae M. M. Huq, Karachi, Pakistan.

This question will be touched on in a future issue.

More S.F., please

Could you please consider publishing some of the science fiction stories of the more noted Soviet writers in your magazine?

George Denissoff, Kauniainen, Finland.

SPUTNIK certainly is a perfect digest, but I would like to see it even more perfect by adding some detective stories, suspense stories, some brain-twisters and better cartoons.

Raj, Bolton, Lancashire, England.

We have published S.F. stories from time to time. During intervals we publish only the facts of real life—often more fantastic than anything in science fiction.

Pictures—pro and con

I would like to suggest if possible to reduce the number of illustrations, and instead publish stories of some prominent writers.

Barkev Kabaklan, Homs, Syria.

SPUTNIK is one of the best magazines of its kind I have ever come across, with attractive articles from all walks of life in the USSR and photographs which deserve special appreciation. An addition of fiction will be welcomed by the readers.

P.V. Babu, Bombay, India.

You reached a new pitch of excellence with the lovely picture of Leningrad rallings in the snow (July issue). *Congratulations!*

Allegra Dawe, Kilburn, London, England.

We offer a compromise: lovely pictures and fine fiction—something we have consistently tried to do.

Unmarried mother

I am writing this letter after reading an article called "The Unmarried Mother" in the July issue of SPUTNIK. To my mind, Valentina committed a moral (not legal, of course) crime. She could have made not only herself happy, but also another man, her husband, who could have been not only the physical but also the spiritual father of her child. Just think how selfish are Valentino's words, "Aren't I well off?"

Stephan M. Radoev, Sofia, Bulgaria.

We think that the main point here is not the happiness of some ephemeral father, but the happiness of a concrete child. And when Valentina says that she is well off, the concept of happiness naturally includes the happiness of her daughter.

I have translated four Russian poems into English, and thought they might be suitable for publication in SPUTNIK.

Laisa M. Gander, London, England.

We are pleased to publish your translation of a poem written by Russian classic Mikhail Lermontov (1814-1841).

THE SAIL

A lone sail whitens in the distance,
Lost in the sea's blue misty foam.
What seeks he in a far-off country?
What turns from on the shores of home?

The wide waves play, the keen wind whistles,
The tall mast, bending, groans and creaks.
Not happiness he leaves behind him.
Alas! not happiness he seeks.

Above him rays of golden sunlight,
Beneath, blue surges never cease.
But he, rebellious, seeks the tempest,
As though within the storm were peace.

LETTERS TO THE EDITOR

Gyuli and Ella

The July issue carries an article about Gyuli Chokheli, a Soviet singer who is very popular here in Poland. She is a raving beauty from Georgia, and Miroslav Murazov's photographs bear out my earlier impression.

You are also quite right in bringing up the universal human problem of the unmarried mother. I think that the life of unmarried mothers is not sweet by far.

I am very glad that you again showed the wonderful sights of Leningrad ("See Leningrad's Railings and Die"). *Every time I read your stories and look at the pictures I recall the two weeks I spent in this city.*

I'd like to see in SPUTNIK an article about the national emblems of the sovereign republics of the Soviet Union, and also read some information about their design and origin.

What about running a quiz? I'd love to take part in it.

Also something about the poet, composer and singer, Bulat Okudjava, would be in order.

Bohdan Cerniak, Poznan, Poland.

Please explain who has called the Georgian singer Gyuli Chokheli "The Soviet Ella Fitzgerald"? The article in the July issue describes her performance of "Mr. Paganini" as Gyuli's supreme achievement. As a matter of fact, this is but a crude and imperfect imitation of a record called "Ella Fitzgerald in Hollywood".

Gyuli Chokheli is a singer with certain possibilities, who can surely claim a measure of success in the world class. So why did so respectable a magazine as yours have to delude the reader by praising Miss Chokheli to the sky on the strength of a poor imitation of the illustrious Negro singer?

Zahari Petrov, journalist, Programme Director of the Sofia Jazz Club, Bulgaria.

It was the Polish audience who gave Gyuli Chokheli this title following her performance at the International Song Festival at Sopot, Poland. No need to take this too much to heart. Don't people call Leningrad the "Northern Venice" and Varna the "Bulgarian Riviera"?

What's happened to hair?

I am writing to you in the hope of learning if many other people from all ports of the world have made similar observations as I have.

I am 20 years old and am a hairdresser. One of the things that has held my interest for a long time now is the fact that today's children seem to have larger skulls and less hair, which is of o poorer quality, than that of grandparents and other forebears. Also, fingernails seem to be of a poorer quality than those of previous generations. Could it be that I am watching the further evolution of man?

As any student of physiology will know, hair and nails are made of complex proteins that the digestive system can't handle and so removes by the growth of these two appendages. Could this, then, mean that the food we now eat contains less protein, or more simple proteins, that are merely adequate for the maintenance of the body?

I would be most interested to hear of similar observations and of any opinions on this matter.

Miss L. E. Ford, 72 Somerford Road, Somerford, Christchurch, Hants, England.

Pen-friends Wanted

I would like pen-friends in Europe. I am 20 years of age, a student of interior designing, and my interests are art, literoture, music and theatre.

Miss Marilyn Davies, 21 Oliver Street, Lismore 4C, New South Wales 2480, Australia.

I want to have pen-pols in Europe and Great Britain. I collect records, stamps, view-cards. My age is 16 and I know Polish, Russian and English.

Iga Thomas, Zalesie Krolewskie, Swiekatowo, pow. Swiecie N.W., Poland.

I would like to have pen-pals all over the world. My hobby is philately. I know German, English and Russion.

Fritz V. Cuhgts (jun), 1554 Ketzin/Havel, Erich, Welnert-Siedlung III, DDR.

LETTERS TO THE EDITOR

I would like pen-friends from all over the world. I am 22 years old and speak only English.

Gayle C. Koch, 6569 Kings Charter, Reynoldsburg, Ohio 43068, U.S.A.

I would like to hove pen-friends from all over the world. I am 14 years old. I am interested in reading, pop and folk music, guitar-playing, stamp-collecting, art and acting. I would enjoy hearing from boys and girls.

Miss Patricia Kaplan, 67 Nicolson Street, Baiky's Mucklenenk, Pretoria, Transvaal, South Africa.

I want to have pen-friends, especially in the North American countries. I am 18 years old and only speak English. My interests are varied, but include pop music, art, theatre and travel. All letters will be answered.

William G. E. Drury, 3 Hart Close, Thundersley, Essex, England.

I am a student of the chemical faculty. My age is 19. Collecting stamps and view-cards interests me. I am fond of sports. Can correspond in English, Hungarian, Rumanian and Russian.

Bolla Csaba, 64 Masinistilor, Cluj, Rumania.

Please include my name in the pen-pal column. Age 24. Interests, sports, music, reading and correspandence. Occupation, clerk.

Neomal E. Ranasinghe, 132 Old Road, Nawlana, Maharagama, Ceylon.

I am a reader of yours, very possionately fond of music and especially of the incomparable performances of the great Soviet pianist, Sviatoslav Richter.

Sviatoslav Richter fan wanted for exchange of records and tapes (I have a big collection). I will correspond in English, French, Italian.

Umberto Masini, 3 Via Maiocchi, 20129 Milano, Italy.

I am 19 and a university student. My hobbies are photography, travel and astronomical observation. I know Japonese and English and I am now learning Russian and French.

Ken Shimada, 20 Kabishimamoto-cho, Shichiku Kita-Ku, Kyoto, Japan.

I am 25 years old and interested in history, antiquities, postcard collecting, photography, sports, philately, swimming and languages. I want to have pen-friends all over the world.

George Gostanian, Suleimanie, 116 Balkis Street, Aleppo, Syria.

I am training to be a nurse. I would like pen-friends anywhere, especially in Europe. I know English and could translate French and German.

Pamela Shepherd, Headlands Convalescent Home, Cliff Road, Torquay, Devon, England.

My age is 18. I am a school graduate. My hobbies are stamps, foreign languages and view-cards. I know Russian, English and German.

Iskra D. Dikova, 25 Boulevard Ruski, Sofia, Bulgaria.

I am 19 years old and interested in popular science, sports, stamps, literature and advertising. I speak English and Tamil.

P. Soundara Rajan, Gitalaya, IV Street, Srinivasa Nagar, Tiruchirapalli-5, Madras State, India.

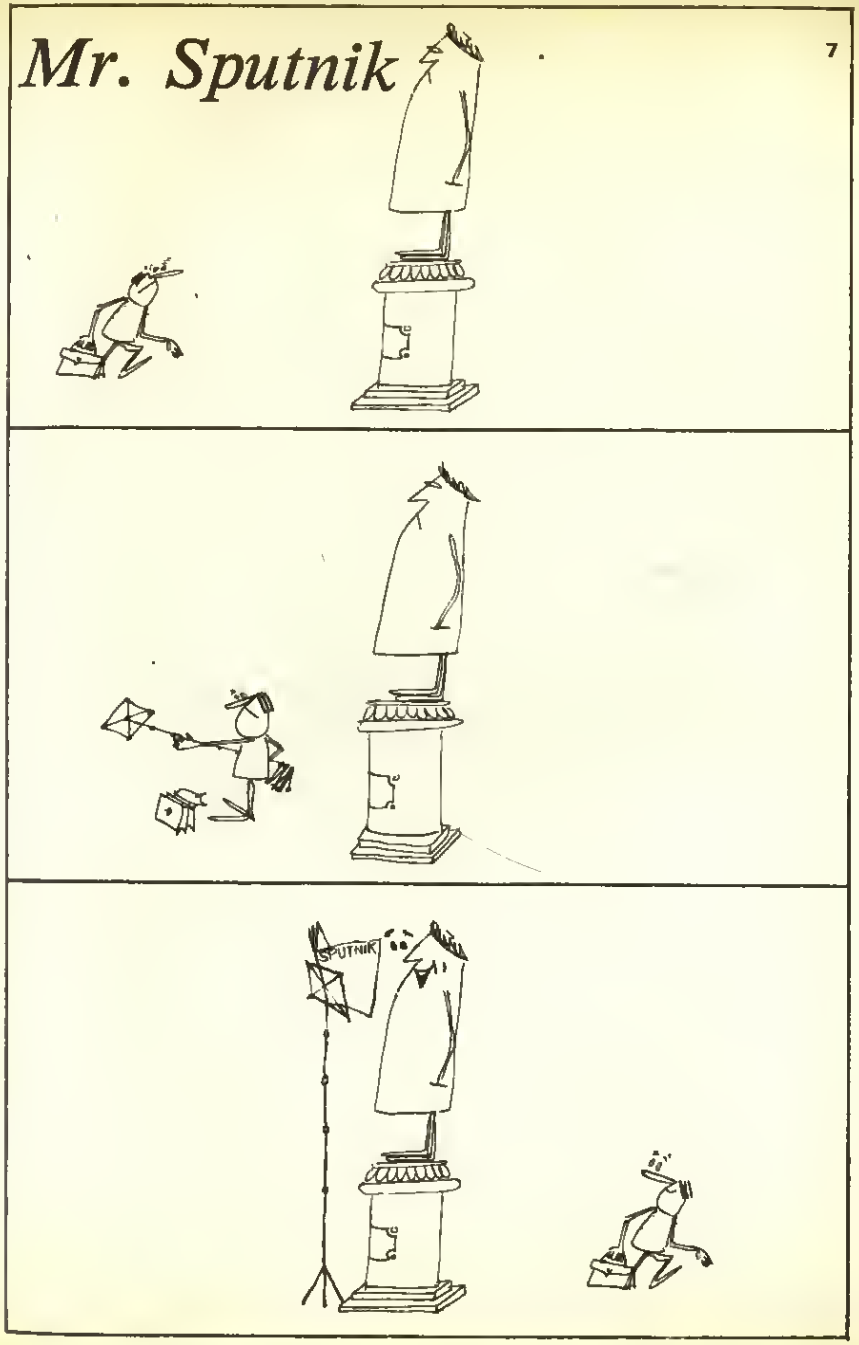
I am 15. My hobbies are stamps, art and music. Can correspond in Polish, English and Russian.

Wieslawa Mendyk, ul.Pogodna 10, Sopot, Poland.

I wish to have pen-friends with whom I might exchange the visits. I am 16 and can speak Russian, English and Serbo-Croat.

Yovanovich Branko, 36 Tsar Urosh Street, Belgrade, Jugoslavia.

We are always glad to hear from readers. Please address your letters to: The Editor, Sputnik Magazine, 2 Pushkin Square, Moscow, USSR.

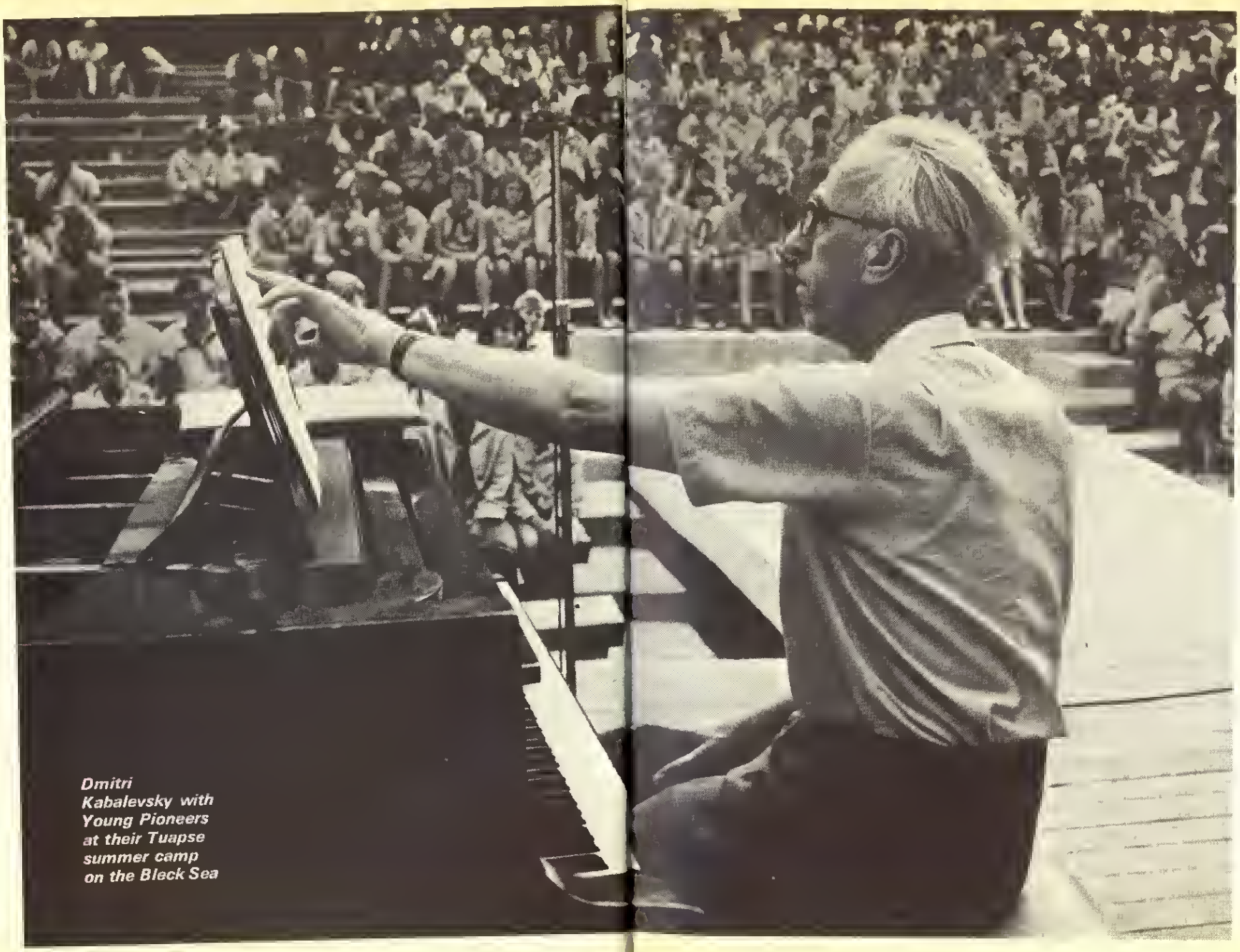


MUSIC and CHILDREN

by Dmitri KABALEVSKY
from the newspaper UCHITELSKAYA GAZETA and the magazine SOVIETSKAYA MUZIKA

The maxim, "Old age is more a trait of character than anything else", certainly applies in the case of Dmitri Kabalevsky, who at 64 is known as one of the most indefatigable of Soviet composers.

His responsibilities range from the Moscow Conservatoire (where he holds a professorship), to the Soviet Peace Committee, to the Collegium of the Ministry of Culture, to the Board of the Soviet Composers' Union, which would fill the day and more for anybody else. But not for Kabalevsky, whose busy schedule includes meeting, teaching and entertaining children.



Dmitri Kabalevsky with Young Pioneers at their Tuapse summer camp on the Bleck Sea

AESTHETICS should be an essential part of anybody's education. In its first decree on schools issued in 1918, the Soviet Government pointed out that "special attention must be paid to aesthetic education".

There are many music schools for children in tbis country. Most of these are so-called general music schools that youngsters attend as a supplement to their general education. Others, known as specialised music schools, offer music as a subject along with the normal school curriculum.

There is also a large number of music circles and classes at Palaces of Culture, Clubs for Young Pioneers and at general education schools. Teaching at these classes and circles is conducted on much the same lines as at the music schools, with certain reservations, of course.

The popularity of music education in the Soviet Union can be judged from the fact that the number of music schools, great though it is (over 4,500 last year), falls short of the enrolment demand which over the past few years has more than doubled.

It is rarely the children who, on reaching the age of seven or eight, decide to take up music and rush to school asking to be taken on. As a rule it is the parents who decide for them. They just come to the school

Singing teacher shows youngsters just what she wants from tham at forthcoming concert. Music school in the town of Vologda

authorities and say, "We've always regretted not having had music lessons in our younger days, and we'd like our children to have what we missed".

These words are the sad refrain of a whole generation that grew up in the hard years of the war and were robbed of many things which only school and family can provide, and this applies first and foremost to aesthetic education.

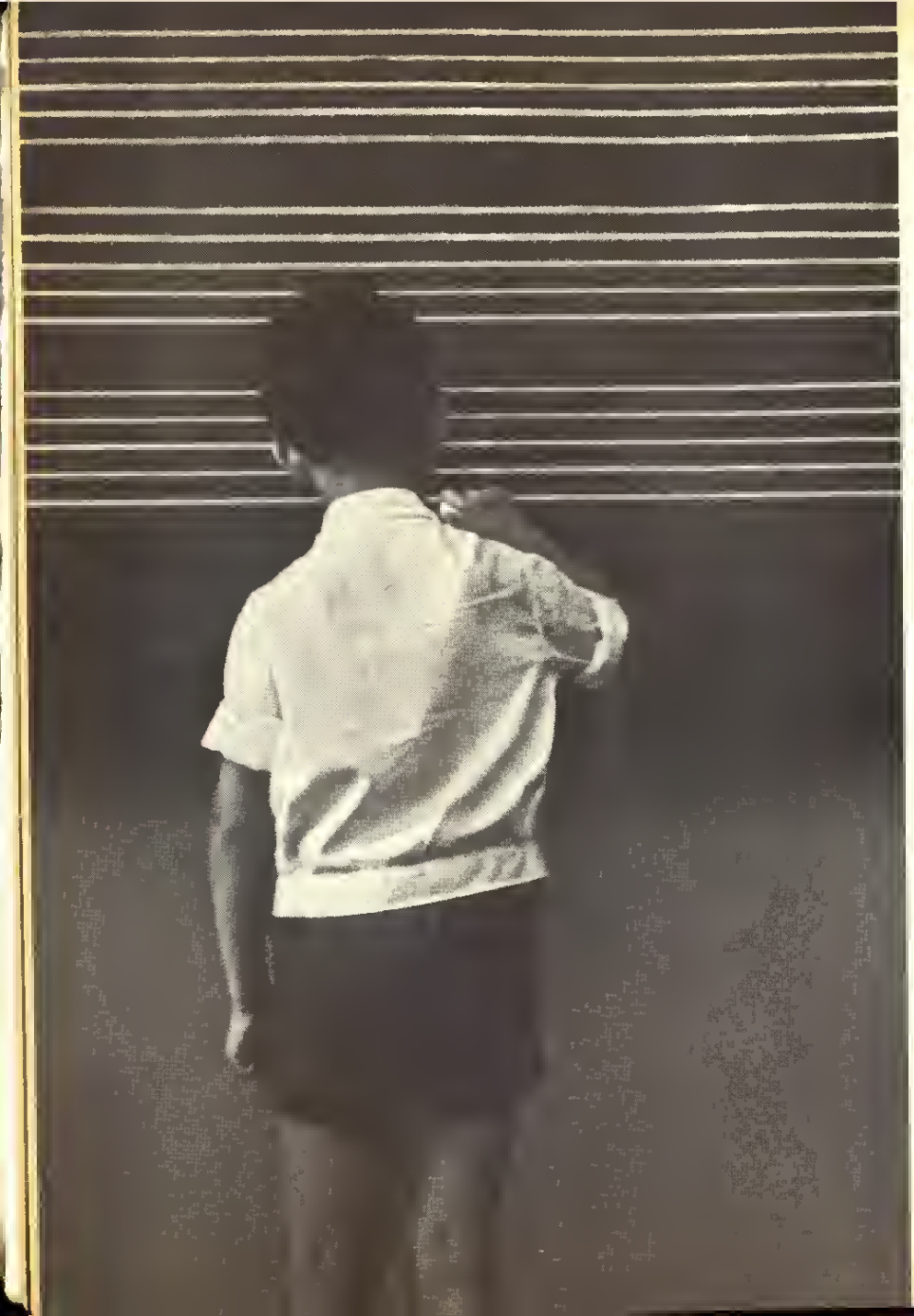
Man needs art. Without it his life is one-sided and incomplete. That is why parents are so anxious that their children should have what they themselves missed.

How lucky those children are whose parents know something about music, and can teach them to love it. Unfortunately, this only applies to a small minority and the rest have nothing for it but to place all their hopes on music school.

Speaking of the popularity of the music schools, I would like to point out that they function not only in large cities, but also in small towns, industrial

Continued on Page 16

Thraa-yaar-old Olya already knows what a baton's for. Soma of her contemporaries are pictured at music school in the following pages



communities and even villages. There are thousands of teachers working at them, real enthusiasts, many of them young graduates from conservatoires and music colleges, who love both music and children and who are wholly devoted to their work.

Naturally, many parents dream of their children becoming professional musicians, and many children who have grown to love music at an early age and have a talent for it share this dream.

While the children who enrol at specialised music schools do so to become professional musicians, the percentage of prospective professionals entering schools where music is just another subject, is much lower. In the case of the latter, the aim should be to give the children a good introduction to the subject.

I am convinced that, when it comes to music, it is far better to be a good amateur than a bad professional. So if a student gains a life-long love for music, such schools have, in my opinion, served their purpose.

Art, the finest of man's creations, is meant for people. That is why every time I listen to children playing I think of the tremendous treasure they are about to possess by taking their first steps into the magnificent world of music.

Some facts about Music and Children

IN THE 1967-68 scholastic year there were 3,364 music schools with a seven-year curriculum in the Soviet Union. They were attended hy 574,000 children, who went there after they had finished classes at general secondary schools.

* * *

ABOUT 150,000 children and adolescents attend 1,201 evening music schools. The course at these schools is a five-year one.

* * *

EVERY year about 350 new music schools for children are opened in the Soviet Union.

* * *

SPECIAL music schools, with an 11-year course, train professional musicians. There are 26 such schools in this country. They are attended by 11,000 children who, in addition to special music training, cover the general secondary school curriculum.

sputnik

SPOTLIGHT

by Vladimir POZNER

Vladimir Poznar, whose personal column "Sputnik Spotlight" will ragularly appear here, is a young journalist and a translator of English and American literatura. Ha has travellad extensively in the Soviet Union and abroad and makes his home in Moscow.

AS I write this end-of-the-year Spotlight, I find myself as far from the cold, snow-bound atmosphere that is the trade mark of late December in Russia as I ever hope to be. The sun shines down from the cloudless sky on the Caspian Sea, the green breakers, crested with white cloud lick at the yellow beach.

A scant 20 miles away, hazy in the heat, tremble the outlines of Baku, "The Windy City", (a literal translation), capital of Azerbaidjan, one of the three Soviet trans-Caucasian republics.

A gold mine

A land of contrasts. The braying of a donkey mingles with the *slurp-hiss-slurp* of the oil derricks. The oil pumps—triangular beaks on steel beams—remind one of prehistoric animals.

Azerbaidjan is a gold mine for the writer: open your eyes and pick up the nuggets.

But with the New Year just around the corner, I would like to touch on one subject—tradition.

What are New Year festivities if not tradition?

As the minute-hand moves towards midnight, we look back on what we have—and have not—accomplished. We weigh our achievements and failures on the scales of time. And we look ahead at the dawning year with hope.

But the New Year is more than that. It is traditionally a time of brotherhood, of friendship—when the past releases us from its grasp and all are born anew to face the future.

Back to Pre-history

The traditions of a people are probably the only infallible keys to their national character. Not the passing fads. Not even certain historic habits that change with the times, but traditions that survive even the greatest historic upheavals.

Strange as it may seem, in Azerbaidjan, that knows neither rain, trees nor snow, the New Year's tradition of friendship dates back to times prehistoric.

Yet time has not blunted its keenness, nor slowed its pulse.

The Russians, as well as the English say "a friend in need is a friend indeed."

The Azerbaidjanians say, "A friend is like a shadow. When the sun shines one sees him. When clouds cover the sky, he is not to be seen." A paradox? Hardly.

If you are in trouble, get out of it yourself without burdening your friend—for such is true friendship.

Also, it is much harder to love someone who is happy, without envy than one who is in trouble and towards whom you can feel noble. That is the way people in Azerbaidjan see it.

The Shepherd and the Devil

Here is a legend.

Once, many years ago, a shepherd was eating his daily meal of bread and milk, when suddenly he saw an old bearded man walking up the mountain towards him. Much surprised, for never before had he met anyone in this deserted place, he offered the old man some bread and milk, and when the meal was over, asked:

"Tell me, who are you? For you are the first man I have ever met here."

"I am the Devil," answered the old man.

"If you are the Devil you must know when I am fated to die," said the shepherd.

"Indeed," said the Devil." I know when I will come for your soul, but I cannot tell you. It is against the Law of God."

But the shepherd begged and begged until the Devil said:

"You have given me of your bread and milk, which is in itself a great oath. So know that I will come for you on the night that you will wish to consummate your marriage."

And the old man disappeared.

At first the shepherd was downcast and sad, but soon he forgot the Devil's words.

Bridal Night

Several years later, the shepherd fell in love, and announced his wedding. When the feast was over, he went to the bride's room. But at the very moment that he crossed the threshold, the Devil appeared before him and said:

"I have come for your soul. Make ready."

The shepherd answered:

"Give me just this one night. Give it to me by the Great Oath we have sworn—the oath of a common meal."

And the Devil looked and said: "Oh Lord, punish me for not taking this man's soul when you commanded me to, but the Oath of Bread and Milk is stronger than your word."

The moral: If you eat of a man's bread and milk, the Devil himself cannot break the bond between you.

So much for the lore and legend—very much part of tradition.

But *where* is New Year, one might ask.

In the towns and villages of Azerbaidjan, high in the mountains, even in the remotest regions where visitors are rare, every home has a room that no-one lives in. It is the best room in the house, its windows face the east. It has the best bed, the softest carpets.

This is the guest-room. It stands empty, waiting for the guest. It may wait one year, it may wait ten, but it remains empty for the guest.

On New Year's Eve, this room is decorated, incense is put in bowls, fresh flowers are made ready—and so every year.

This is tradition, something that has never changed, although today in the guest-room one may find an electric shaver, even a portable radio—also for the guest.

That is the only change in a tradition of open doors and open hearts.

THINK OF A NUMBER!

Ivan Ivanovich left the train to get a snack while the train made a short stop in Kiev. He looked at the number of his carriage: 1147. "Well," he said to himself, "that should be easy to remember; it is the year Moscow was founded."

Returning from the buffet he approached a railwayman and asked politely "Pardon me. Do you happen to remember what year Moscow was founded?"

AGE DOES NOT WORRY ME

At 50, 55 or 60 years of age *(see details below),* most citizens of the USSR have the right to retire on a pension. A person may take advantage of this right and receive his pension, or be may not and may lawfully continue to work.

He may be living in the midst of a large family, or he may have no close relatives at all. In the latter case, he may choose to live in a State-run old people's home.

Will the pensioner find an outlet for his energies in aetive work for the good of the community? Or will he become a member of the "bench squad" in the courtyard? Having nothing to do can be a terrible thing.

Tbe average life-span in the USSR has reached 70 years. This fact, a good thing in itself, creates a number of problems for society, especially in view of the growing numbers of pensioners.

In 1941 there were four million pensioners in the USSR. Twenty years later there were eight times as many. By the end of 1967, the number bad risen to 35 million.

Back in the 1930's, Soviet lawmakers decided against the levelling approach in the distribution of social insurance funds. The amount of pension was made dependent on the number of years worked, trade union membership, the kind of disability, and so on.

The second qualification—trade union membership—no longer affects eligibility for a pension. There have been other changes, too. The law has been amended several times, being made more specific each time.

For example, the 20-year period (1941-61) began for us with the war. Millions of workers stopped producing goods and went away to fight. For those who saw active service, each year of service was counted as three.

That sort of compensation seems hardly excessive; indeed, perbaps it is insufficient when we remember how many men in the prime of life returned crippled, blind or shell-shocked. Or did not return at all.

The factories evacuated to the east, beyond the Volga, the Urals and to Central Asia, worked to the limit of their capacity to produce the goods to throw back tbe invaders. Often machine and assembly lines were put into operation when tbere was little besides a roof to keep off the weather.

Manpower was scarce, and workers sometimes stayed in the shop round the clock for several days in a row. Women learned trades usually

considered strictly "a man's job". Teen-agers who ought to have been in school, stood long hours at machines which they had to climb on a box to reach.

And the consequences of war, when it was all over, remained with us for many years. In this case, as in plenty of others, the granting of a state pension was no sorry act of charity, but a solemn tribute to justice; one way of helping people back to a normal life.

In Article 2 of the Law on State Pensions, we read that pensions in the USSR are granted in cases of (1) old age, (2) disablement, (3) loss of breadwinner.

The entire text of the Law fits into a thin booklet, but the commentary to the text, printed separately, takes up 440 pages of fine print.

Here are some of the more general points of this Law:—

Article 6. Pensions are paid by the State out of funds annually allocated for this purpose from the State budget of the USSR, which includes the State social insurance funds, consisting of income derived from enterprises, institutions and organisations. . . *(NOTE: Social insurance contributions are made by factories, offices, farms, etc., with no contribution payable by the insured person, nor any deduction being made from his pay.)*

Article 7. Pensions are tax-free.

Article 8. Industrial, office and professional workers are eligible for an old-age pension: for men, upon reacbing the age of 60, having worked not less than 25 years; for women, upon reaching the age of 55, having worked not less than 20 years.

Article 9. Special conditions in regard to old-age pensions hold true for industrial, office and professional workers engaged in work underground, under conditions harmful to health and in hot workshops: for men, upon reaching the age of 50, with a working record of not less than 20 years; for women, upon reaching the age of 45, having worked at least 15 years. . . . *(Note: These workers receive pensions based on a higher percentage of their earnings compared with other workers).*

Article 53. The pension sum is calculated on the basis of the average actual monthly earnings. Earnings include all forms of payment for work done. . . . The annual long-service bonus should be included in the earnings upon which calculations are based.

Article 54. Pensioners from among industrial, office and professional workers and Servicemen, who have worked for not less than two years after the granting of the pension, and who are earning a greater amount than at the time the pension was granted, have the pension sum re-calculated on the basis of the higher earnings.

In addition to the basic text of the Pension Law, there is another separate document, Regulations Governing the Granting and Payment of State Pensions, passed by a decree of the USSR Council of Ministers in August 1956. According to these Regulations:—

- All industrial, office and professional workers, whether regular staff or non-staff, including those engaged in permanent, temporary and seasonal work, as well as work of short duration or of a casual nature, are eligible for an old-age pension.
- Citizens eligible for two or more different categories of pension at one and the same time (for example, an old-age pension and a disablement pension) may take their choice as to which one shall be paid to them.
- Citizens eligible for a State pension may apply for one at any time after becoming eligible, witb no time-limit.
- Old-age or disablement pensions are granted irrespective of whether the person who is eligible has stopped work altogether or is still working at the time of application.

The book quoted here (The Law, the Regulations, the Commentary) was published in 1964 and is already partly outdated. Further pension laws were passed in 1965, 1966 and 1967.

During this time the pay, and consequently the pension sum, was raised for teachers, medical workers and machine operators.

Collective farmers began to receive pensions on the same terms as industrial and office workers, which meant 11 million more pensioners.

The pension age was lowered by five years for women textile workers, anyone working in tbe Far North, and disabled war veterans.

SOCIAL INSURANCE AND SECURITY IN THE USSR

Facts and figures

Soviet people's living standards are determined not only by the share of the national income they receive in the form of wages and salaries (depending on the quality and quantity of their work), but also by the size of public consumption funds. These funds go to finance free medical aid and education (from primary to higher).

Workers' and office clerks' holidays, students' stipends and the accommodation at kindergartens and nurseries are also paid for out of these funds.

In 1966 these funds all over the country totalled more than 43,000 million roubles, and by 1970 (the end of the current five-year plan period) the figure will have risen by 40 per cent.

One-third of all Soviet public consumption funds are spent on providing social insurance benefits for the people. Last year payments averaged 149 roubles for every employee.

* * *

Pensions account for about 9,000 million roubles annually from the public consumption funds, and this year the total amount devoted to social insurance will be 14,000 million roubles.

* * *

Sick benefits, too, are a major item. These are determined by the person's average wage and length of service. For instance, if an employee falls ill within three years' work, he or she will receive half the average wage usually earned; after three to five years' work, 60 per cent; after five to eight years, 80 per cent; and after eight years, 100 per cent.

* * *

Trade unions administer all grants and benefits, except pensions.

* * *

Workers needing special diets are provided with coupons for use at dietetic canteens, usually found at their jobs. They receive 20 per cent free of charge, and pay only 30 per cent of the usual price for the remainder.

* * *

The same principle applies to sanatorium and rest-home accommodation, which 6,000,000 people availed themselves of last year. In the past 10 years the network of specialised prophylactic dispensaries has been enlarged two-and-a-half times.

Great care is taken of invalids. They receive State pensions, together with wages or salaries if they work.

Invalids are given priority service at medical establishments, and are provided with 110,000 sanatorium and rest-home places annually. These are either free or at greatly reduced cost, and in many cases travel expenses are met by the State.

Those unable to walk are provided with mini-cars equipped with full manual control. These are maintained by the State and are replaced every five years.

" 'Tis never too late to correct the mistakes of youth. "

—Drawing by A. Grunin

THEY WERE 'PROBLEM CHILDREN'

Specialised schools for young offenders were organised a few years ago to replace reformatories. N. ORLOVA, Senior Assistant Procurator for juvenile delinquency, and H. KARIMOV, a professor at Dushanbe University, describe the work of such a school in the Central Asian Soviet Republic of Tajikistan.

condensed from PRAVDA

Talk about 'problem children' and 'hopeless cases' is often simply an attempt by parents or teachers to cover up a lack of skill in training children.

The citizens of Dushanbe, capital of Tajikistan, were horrified to learn that an institution for young law-breakers had been set up right in the heart of the city. But the teaching staff under David Feldstein did not share their fears.

They were enthusiasts who had left other jobs to work at this school; people like Kurban Safolov, the art teacher, who had worked at a TV station; Anatoli Belousov, the P.T. instructor, an ex-Serviceman; and Aziz Khalimov, a teacher straight from the Institute of Linguistics of the Tajik Academy of Sciences.

Perhaps the most difficult thing was to get their charges to study. Most of them were drop-outs from schools. Some had spent three or even five years in the same class before they dropped out.

They had no taste for studying and no interests—both had to be developed gradually, painstakingly. A lot of effort went into it: taking the boys out on excursions, giving lectures on a subject of their choice, organising educational debates and other extra-curricular activities.

Another problem was to give the children a taste for work. The staff were dealing with youngsters who considered honest labour a disgrace, and who at first took work assignments for punishment.

For that reason, the teachers rejected the idea of punishing pupils by giving them work to do, although this method was envisaged in the Rules for Specialised Schools.

They found that "punishment by idleness" was far more effective.

The pupils gradually adopted their teachers' respect for work. Here is an instance of how the staff employed the method of education by work:—

Tbe summer holidays came and the scbool was going out to camp. The principal could have arranged for the children to go to a nicely laid-out place, all ready to be lived in. Instead, what the children got was an abandoned village some 45 miles out of town.

They arrived to see crumbling clay buts, dried-up irrigation ditches and a witbering garden. They were told it was up to them to make the place liveable.

Led by their teachers, the boys got down to business at once. Water was laid on, electricity installed, a kitchen, a dining-room and dormitories were built, and sports grounds and a swimming pool appeared. But the most important thing was that the "misfits" came to find work a source of moral satisfaction. They enjoyed working as a team.

To satisfy the boys' various constructive inclinations, the school has organised several workshops for them. This is not just a continuation of "work therapy"; the boys can learn a trade tbere. They can become joiners, lathe operators, car or radio mechanics.

Nearly all the boys who took qualification exams last year passed them and received trade ratings.

The staff rely largely on the competitive spirit in children. For instance, they run a competition among groups for exemplary conduct or cleanliness. There is a prize for the winner at the end of the year: an excursion to the museum town of Samarkand, or a trip to the Pacific coast, or to the Baltic. Six of the very best pupils flew to Vladivostok, were shown around the city and taken aboard a warship.

The top prize, however, is the "confidence pass". This pass gives the owner the right to leave the school premises at any time after classes and up to bed-time. Umat Baratov was the first to merit this award. The boy was so proud of it that he did not even use his privilege the first day, but instead roamed around the grounds, showing his prize to the other boys.

The school has now been open for almost three years. The verdict of public education officials who have visited it is that the staff "have built up a close-knit body of children, found effective forms of self-administration, and succeeded in introducing the adolescents to labour and social activity."

Although much has been achieved, many problems still remain to be solved. For instance, the problem of group formation. A group is made up of 20 children, whereas a study class numbers from eight to ten. On what principle are children to be grouped? According to the time of enrolment and age? Group all the boisterous ones together and the quiet ones separately? No answer bas been worked out yet.

Equally important is the question of group leaders: when to stop appointing them and let the boys make tbeir own choice.

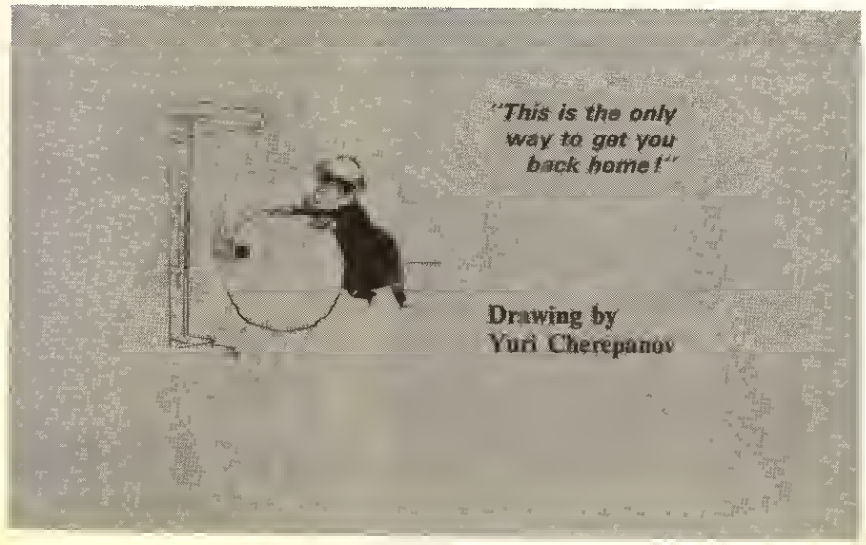
In grouping newcomers, the staff often relied on the ones who had the respect of their comrades, which was usually because of their physical strength. The staff were naturally not satisfied witb this jungle-law element, and sought ways to teach every member of a group to acquire the ability to take orders and assume tbe initiative when necessary.

From time to time the groups were broken down to carry out specific assignments, and each of the sections bad their leader.

Social activity helps each boy to find his place in the life of the collective. Every pupil at the school takes part in some social activity.

The Rules for Specialised Schools also leave much to be desired. Many of them were copied from the manual for reformatories and are hardly applicable. Others have become outdated. In particular, the rule concerning school-leaving age should be revised.

Under the present rules, the children leave the school at 15. It would be more expedient to keep them there until they are 17 or even 18. This would give more time for the new norms of conduct they bave acquired to become really engrained in their characters, and thus lessen the possibility of a relapse.



Drawing by Yuri Cherepanov

Alexei Fyodorov at work

compiled from an article by Galina SILINA (Novosti Press Agency) and a short article, "A Pipe for Simenon," in the magazine NEDELYA

40,000 PIPES FOR PLEASURE

Pipe smokers are, in general, a contemplative breed. Scratch a pipe smoker and you find a philosopher of sorts.

This special species delights not only in the act of smoking, but in the ritual which pipe smoking demands—the process of breaking in a new pipe, the elaborate cleaning ceremony, the art of tamping tobacco into the bowl, the first long-drawn puff, and so on *ad infinitum*.

The confraternity of pipe smokers is world-wide. Nothing delights a member of the brethren more than the acquisition of a new, distinctive pipe.

And this is where our story really begins.

In Leningrad there is a craftsman, Alexei Fyodorov, whose fame has spread far beyond his native city and, indeed, his native land. His hand-carved pipes are beautiful creations, masterpieces of design and balance.

Eleanor Schreiber, an assistant professor at Leningrad University and a translator of Georges Simenon's psychological mystery novels into Russian, decided to send the French writer a Fyodorov pipe for his vast collection. When she gave her order to the specialist, he decided to add two more pipes as a personal gift from himself: one a Russian-style type popular in the early part of the last century, and the other a more modern European type.

An inveterate pipe smoker and a fine connoisseur, Simenon was delighted with the gifts and sent this glowing letter of thanks, pictured on

Monsieur Alexis Fedorov
Maître en Pipes
Moika 72
Appartement 31
Leningrad

Cher monsieur,

Je répète volontiers aux journalistes qui m'interrogent sur ma profession que je suis un artisan, car c'est pour moi un des plus beaux mots. Or, vous représentez l'artisanat dans ce qu'il y a de plus respectable et de plus exaltant. Votre lettre, que m'a traduite Mme Schreiber, m'a fort touché. L'arrivée, ce matin, des pipes m'a enchanté et j'ai tout de suite voulu les essayer. La pipe typiquement russe est une merveille. Les anneaux d'ivoire lui donne une [illegible], dans leur simplicité, sont [illegible].

Vous [illegible] par des pipes est, faute [illegible]che. Or, vous le savez, [illegible] pipe peut être [illegible]tre.

A cet [illegible]-maître et j'espère bi[illegible] dans votre at[illegible] ne nous pe[illegible]ent à coe[illegible] place d'honneur dans m[illegible]re indispensable, je le [illegible]

Je voudrais, de mon côté, vous témoigner ma reconnaissance et ma sympathie. Mais comment ? J'y penserai les prochains jours.

D'ici là recevez, cher monsieur, mes voeux les plus sincères et croyez, que si j'ai gagné ce mois un ami russe vous avez désormais un ami français. Vôtre.

(Georges Simenon)

[illegible]mp

1066 EPALINGES (VAUDI, BI SSE TÉLÉPHONE 91 63 91

Georges Simenon's letter to Fyodorov

the left, to Alexei Fyodorov:—

"I always tell reporters interested in my work that I am simply a craftsman, because I consider that one of the most beautiful words in the world. You are the personification of craftsmanship, which I respect and admire. Your letter, translated by Eleanor Schreiber, was very touching, and as soon as I received the pipes I wanted to try them out. The one executed in the Russian style is a miracle of grace and lightness. The ivory rings make it especially elegant. The other two pipes are remarkable for their purity of line and perfect balance.

"You, of course, are familiar with that word 'balance' and know that the fault with most pipes is that due to lack of adjustment they are out of balance and press down too hard on

Eleanor Schreiber (right) meets Simenon

the teeth. Few pipe makers pay enough attention to this. The fact is that a pipe may he hoth large and heavy and yet so finely halanced that it is weightless on the jaw.

"I understood immediately what a connoisseur you are, and hope that when I come to Russia I shall have an interesting talk with you on the suhject we are hoth so fond of.

"Dear Monsieur Fyodorov, please accept my very hest wishes, and helieve that if I have gained a Russian friend this month, you also have a French friend."

Following hard on the heels of the letter, Fyodorov received a heautiful wood-carving set made of Solingen steel from the French writer.

On another occasion a Camhodian Amhassador to the USSR was attracted hy a display of Fyodorov's pipes in the Artists' Union Gallery on Leningrad's Nevsky Prospect. In due course he ordered a numher of pipes from the master. But Fyodorov refused to hegin work until he knew more ahout his client.

"How old is the Amhassador?" he asked. "It makes a difference, you know. Most young men like a straight stem, while more mature smokers often prefer a curved one.

"A man's trade sometimes determines the kind of pipe he needs. Take a fisherman. Why do you think an old salt is always portrayed in oilskins and smoking a hig pipe with a deeply-curved stem? Because such a pipe leaves the hands free to work, that's why!"

Craftsman Fyodorov started out as a singer on the variety stage. That was 40 years ago when Russian and gypsy music was as popular in Leningrad as it is today.

His father-in-law did not entirely approve of Fyodorov's choice of a career, and made every effort to persuade the young singer to ahandon his guitar for the wood-turning lathe. Alexei spent hours learning the trade, and one day decided to carve a pipe.

The attempt was successful, hut neither the young man nor his father-in-law had any idea that this pipe was the first of 40,000 he was suhsequently to create hy lathe and hand. Yet in a short while Fyodorov gave up his singing career and hecame a full-time craftsman. Now he only takes down his guitar from the wall to entertain his family or close friends.

Fyodorov works for a Leningrad applied arts shop, and none of his pipes sits on the shelf for long. Many are connoisseur pieces, for he seldom repeats a design.

To hreak in a new pipe, says Fyodorov, you should pack it full of a good quality, aromatic tohacco. It takes some time to get the sides of the howl well charred. When cleaning, always make sure not to scrape all the char off. And never knock the howl against a tahle or hard ohject—even if you don't hreak the stem, the pipe will end up out of line and scratched.

Finally, treat your pipe with deference, take time over the ritual of cleaning, filling and lighting up. No pipe will perform well for an impatient smoker.

Drawing by Vitali Peskov

Wild Life

FIVE MINUTES TO TWELVE

from the magazine YUNI NATURALIST
(Young Naturalist)

In the lost 300 to 400 years, man has destroyed nearly o hundred species of mammals and several dozen species of birds. The last tarpan (wild horse) was killed at the beginning of the twentieth century. The seo cow vanished in 1768, only 27 years after its existence was discovered. By the early twentieth century the aurochs (as the European bison is popularly, though incorrectly, known), the soigak antelope, the sable, and the beaver were threatened with utter extinction. Russia, once famous for the wealth ond enormous variety of its founa, was on the verge of catastrophe—plunder of the land, upsetting the balance of nature, must inevitably have led to the most regrettable resalts.

The history of the aurochs, the bison that were once so plentiful in the forests of Europe, is one of the most tragic in the animal kingdom. It could be compared only with that of their cousin, the American bison, which was on the verge of extinction only several decades ago.

First to disappear, probably about the first century A.D., were the aurochs in England, northern Spain and Greece. In France they vanisbed in the sixth century. The last aurochs around the Baltic was killed in 1755; the last in Rumania in 1762.

By the beginning of the twentieth century, the aurochs' only refuge was in the forests of eastern Poland and the upper reaches of the River Kuban in the Northern Caucasus. But man continued to pursue them even there, and the last three specimens in the Caucasus were killed in 1920.

Tbeir number in Poland was considerably reduced during the First World War, for wild oxen often found their way into the regimental soup-pot. By the end of the war only nine remained. The last wild aurochs in Europe was stalked and killed hy Bartolomeusz Szpakowicz, an ex-forester whose duty it should have been to protect the animal.

At this point the aurochs could have been written off as extinct but for the fact that 96 of the animals still remained alive in zoos in various parts of the world.

In 1923, on the proposal of the Polish naturalist, Jan Stoleman, an International Society for the Protection of the Aurochs was formed. It was the decision of this body to cross the European bison with its American cousin.

The first descendant of this union was then to be mated with a pure-blooded aurochs, and this process continued for a number of generations for the purpose of improving the breed. The final result was that even experts were unable to tell a pure-blooded aurochs from the hybrid.

Then specialists in the Soviet Union set ahout saving the aurochs in their country. By 1940, the aurochs-bison appeared in the Caucasus, this time to be watched by keepers in a special preserve. In 15 years the original five had increased to 106.

Aurochs began to be bred in Byelorussia, too, in the Belovezhski Forest and in three other special preserves.

As a result, by the end of the 1950's there were 79 full-blooded aurochs, 19 bison and 182 aurochs-bison and other hybrids living in Soviet zoos and preserves—a total of 280 of the rare animals which 40 years previously seemed to have disappeared for ever from the face of the earth.

The price of fame

Russia was always known for its beavers. A little over a hundred years ago one could hunt beaver in the vicinity of Moscow. And there were many more in Byelorussia, the Ukraine, the Crimea, the Caucasus and in the region of Lake Baikal in Siberia. The beaver was prized for its silky brown fur and its valuable musk glands.

Clearly, this sort of fame was not likely to do the beavers any good, and indeed it led to such drastic depletion in their numbers that by 1900 only several hundred were left in the entire territory of what is now the USSR.

It looked as if the days of the beaver were numbered. But 30 years ago the Soviet Government passed a law forbidding the hunting of heaver and creating preserves for breeding them, and today the country's beaver population numbers nearly 40,000. Now even hunting, after being altogether banned for years, is again permitted—under strict controls, of course.

It was a similar story with a number of other fur-bearing animals in Russia. The much sought-after sable felt safe only in Siberia, in the famous Barguzin Preserve near Lake Baikal; in other places, like the mink, marten and otter, they were mercilessly hunted down—their fur being worth its weight in gold on the foreign market.

In the old days, the people of Siberia were even made to pay their taxes to the czar in furs instead of money.

Soon after the October Revolution, the Soviet Government established several breeding farms for sable and desman (a shrew-like mammal). By 1959, some 15,000 sable could be released in areas where they had lived before being virtually annihilated.

Their "return home" was a success —today there are so many sable in the Soviet Union that it seems unbelievable that the danger of extinction ever threatened them. The number of other fur-bearing animals, including marten, ermine, mink and squirrel, has also increased sharply.

Continued on Page 49

But for country-wide action, creatures like this baaver might today be extinct

Kabarga antelope: mothar and child

Sable—its fur was worth its weight in gold

Deer now find sanctuary in Belovezhski Forest

The saigak of Central Asia

Happy tiger—hunting is banned!

Few people are aware that the Bengal tiger has relatives outside India. Yet the Ussuri tiger might well be described as its "big brother". Living in the Soviet Far East and in China, the Ussuri tiger is not only larger than his Indian counterpart, but more placid and handsome as well.

His good looks were very nearly his undoing, for hunters, inspired by his gorgeous appearance, went to fantastic lengths to have his skin. If one takes into account that tigers multiply very slowly, and will not breed in captivity, it is easy to see the necessity for a law banning hunting. Such a law went into effect in 1956, when there were only about ten Ussuris left. Now they have multiplied and total 80.

Mass slaughter

About a hundred years ago, countless herds of the saigak antelope roamed the Volga Delta and the plains of Kazakhstan. In winter the antelope were driven out on to the ice and slaughtered in tens of thousands, killed for their little antlers. These were sold in China, where they were considered to have medicinal properties.

By 1919 hardly a thousand specimens were left. Soviet scientists insisted on a strict law to protect the saigak.

Some years after the law was passed, Professor B. Grimek, director of Frankfurt Zoo, wrote about what he had learned on a trip to the Soviet Union:—

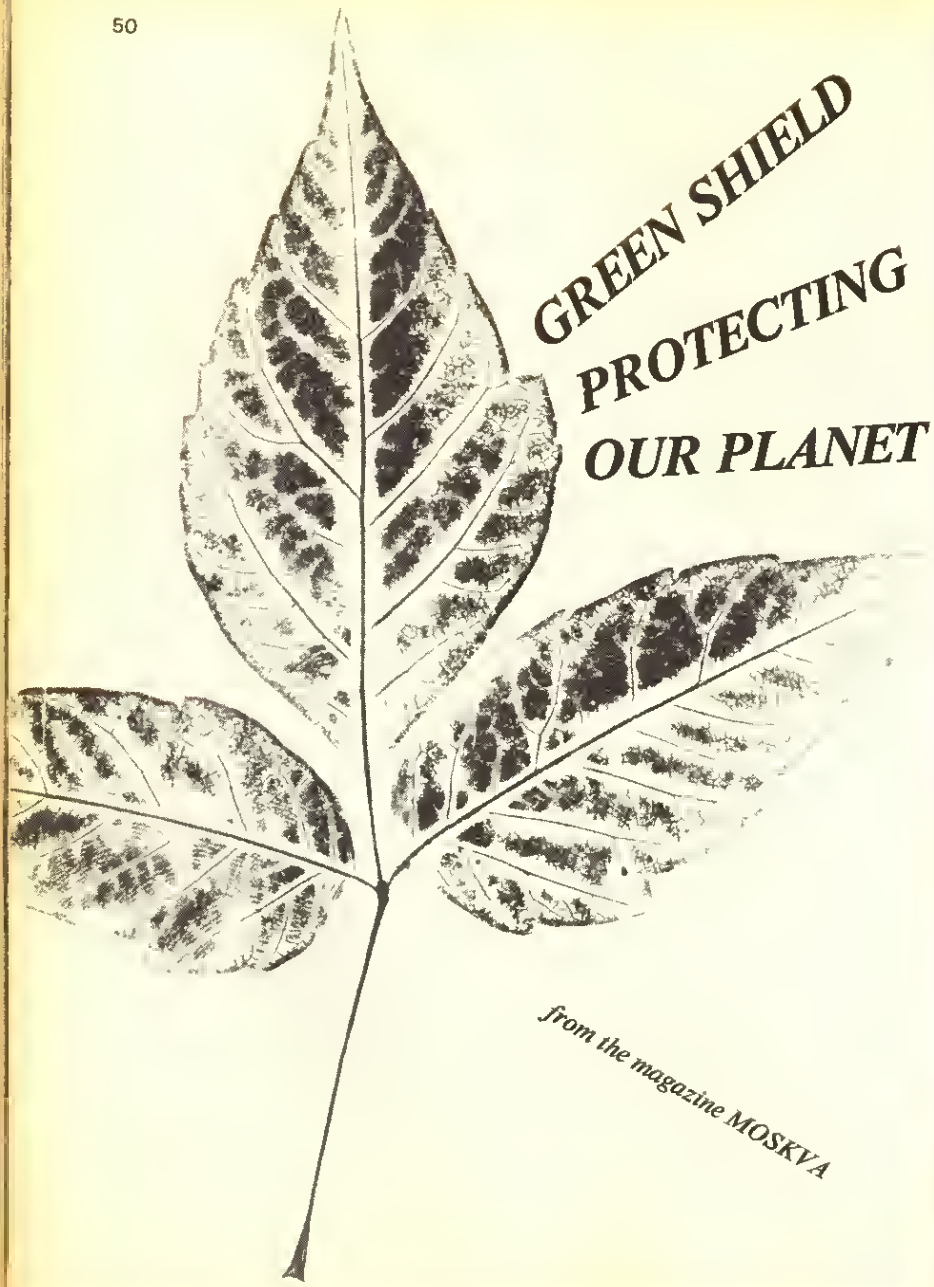
"By protecting the saigak from the air, by safeguarding the places where the female has her young, the Russians have succeeded in bringing the number of saigak to about three million, or as many as there were in the middle of the last century.

"By permitting some shooting, they get enough meat annually to feed a thousand people for a whole year, in addition to tens of thousands of square yards of hides. They also export thousands of antlers. At the same time, the number of saigak has not diminished.

"If in the 1920's Soviet scientists had not intervened in the matter of saving the saigak, this animal would be on the verge of extinction, no longer roaming the desert steppes of Kazakhstan."

We could go on and on with stories of mammals, birds and fish threatened with annihilation, but saved thanks to measures taken on a country-wide scale. What we have mentioned here, however, is a good illustration of the way scientists, supported by the State, are working to safeguard the wealth of wild life in the Soviet Union.

As for plant life, perhaps the best example is provided by what has been done and continues to be done for forest and woodland. ☛



GREEN SHIELD PROTECTING OUR PLANET

from the magazine MOSKVA

Take one hectare (roughly two and a half acres) of forest land. What does that give us? True, a lot of trees. But much more, too. For instance, it can provide 30 people with air that is enriched with ozone and volatile substances that kill bacteria; it can contain up to 1,200 pounds of edible mushrooms; increase the yield of a grain field lying adjacent to it; help to produce a bumper crop of fruit in the nearby orchard; serve as protection for an apiary; help to prevent the choking up of a reservoir with silt or mud. But perhaps its most important work is stopping the surface drainage of water from rain and melting snow, collecting it in the ground, preventing soil erosion, and protecting fields from dry winds.

* * *

Russians have been planting forests in the plains for centuries. In the eighteenth century, Peter the Great witb his own hands sowed a large number of acorns in the vicinity of Taganrog in Southern Russia, and ordered that a great forest be planted.

Forest belts alternating with fields were to be seen in Russia a hundred years ago. But it was only in 1948 that the State took upon itself the difficult but worthwhile task of protecting and transforming nature on a country-wide scale. On October 20, 1948, a decree was passed by the USSR Council of Ministers that provided for the planting of trees and digging of ponds and reservoirs for securing regular good harvests in steppe and wooded steppe regions of the European part of the USSR.

While this law was being put into effect, forests were planted not only in the European part of the country, but also beyond the Ural Mountains, in the Transcaucasus, in Kazakhstan and the republics of Central Asia. It was a complex operation and in many ways an experiment, but the State backed it with enormous funds, and this in spite of having to bear the colossal burden of post-war reconstruction as well.

In a few years, special schools had trained tens of thousands of forestry experts, engineers and mechanics specialising in forest work; 570 forest protection stations were set up, and 230 large forest reserves. The next 15 years would see the planting of nearly 15 million acres of forest.

And the results are worth all the efforts. Every year, forest belts increase the crop yield in nearby fields to at least double that of unprotected fields, and to three or four times as much on many farms.

FORESTS—PROBLEMS AND SOLUTIONS

by Professor Boris VASSILIEV
from APN NEWSLETTER

This country needs as much wood annually as can be grown on an area of 6.2 million acres. In the last 25 years, 144 thousand million cubic feet of timber have been cut down, of which 134 thousand million cubic feet came from areas where the entire forest was cut down.

This is more than all the forests of Sweden, Norway and Finland put together.

Is this a good thing or a bad thing?

The main thing is, it was necessary to our economy. In the second place, this figure falls well short of the annual increment of 12.3 thousand million cubic feet of timber in logging areas.

Thus, our timber reserves will last us for centuries provided that we:—

- Take into account the timber resources of a given region when building towns.
- Cut down timber only strictly according to plan.
- Plant new forests as old ones are cut down, at the same time improving the quality of the timber.

We are now doing everything we can to implement these rules.

Whereas previously the lumber trade was carried on chiefly in the European part of the USSR, with the northern and eastern parts of the country supplying only a quarter of our timber, today the North and East supply 70 per cent.

New plantations cover 3.75 million acres annually.

One person out of every ten working in forestry has at least a full secondary school education, plus two years of special training, and over 3,500 experts are working on problems connected with forestry.

Equally important is the existence of a law protecting forest resources. Actually it applies less to individuals (poachers, etc.) than it does to factory managers, who are held personally responsible—they are liable to heavy fines—for any damage done to the forest.

NATURE AND THE STATE

from APN NEWSLETTER

Nature conservation was one of the first considerations of the young Soviet State.

In 1919, in the midst of famine and civil war, at a time that meant life or death for Soviet rule, a Commission for State Preserves was set up, and the decision was made to create the first preserve in the Volga Delta.

In the five years that followed, the Government issued a number

Continued on Page 56

Typical sylvan scene near Moscow

Wind-breaks on a Georgian tea plantation

Giant mushroom makas its own small contribution to protecting the Belovazhski Forest in Byalorussia

At a tree nursary naar Moscow

of decrees on nature conservation and preserves.

In time, however, it became clear that in addition to the preserves, a law was necessary strictly to define the relationship of man to nature. Although most people claim to be nature-lovers, few behave in a responsible way towards any part of it. So where the code of ethics is insufficient, a code of laws must fill the breach.

Each of the 15 Soviet republics has its own law, the essence of which is not to protect nature against man, but to conserve nature for man.

Each law lists all the animals, fish and plants that are to be protected. In Armenia, for example, land, forests, mineral wealth, water reserves (rivers, lakes and subterranean reservoirs), parks and old trees are specified, along with rare plants, waterfalls and valuable animal species.

The law also enumerates actions qualified as criminal. For example, Clause 2 lists the measures taken in Georgia to fight water, air and soil pollution.

All violations of these laws are punishable as normal criminal offences. In Estonia, for example, Clause 4 says that "any person who wantonly causes damage to nature is subject to imprisonment for up to two years".

The animal population of the Soviet Union includes about 300 species of mammals, 700 species of birds, 124 species of reptiles and 30 amphibians.

Such trees as beech, pine, fir, silver fir and birch occupy an area of about 1,500 million acres.

*

The first natural preserves were set up in Russia in the seventeenth century. These were the hunting grounds of the czar and his courtiers.

In the eighteenth century, the Russian Government issued special wild life conservation decrees. For example, a law promulgated on June 17, 1763, banned all hunting between March 12 and June 9. This law, the first of its kind in Europe, applied to rich and poor alike.

*

Today there are 60-odd natural preserves in the Soviet Union, with a total area of 10.5 million acres.

Some of the preserves are closed to hunting and fishing for about five years. This period is considered long enough to restore numbers, and the ban is then lifted and hunting reopened.

MAKING BETTER USE OF OCEAN'S GIFTS

People are going hungry in many parts of the world, yet the sea's food reserves could feed a world population several times greater than the present one—if only we made better use of them

Academician Boris BYKHOVSKY examines this question in an article in the newspaper TRUD.

The world "fishing ceiling" may well be reached within the next ten years unless more rational fishing methods, scientific breeding and conservation, exploitation of new forms of sea food, and other measures have the desired effect.

The average annual rate of increase of the sea barvest, which was ten per cent about eight years ago, is now only four per cent, and this comes not so much from the old fishing grounds as from new ones.

In some traditional fishing areas the stocks have fallen off disastrously, even to tbe extent of being practically exhausted, and many species are threatened with extinction as a result of wasteful fishing methods. In particular danger are those species, like flounder and halibut, which reproduce slowly.

This makes it urgent to find effective means of regulating fishing on a world scale, through international treaties and agreements.

Drastic revision of fishing policy is needed, including agreement on the minimum sizes of fish that may be caught, minimum net mesh and catch quotas for different species, depending on size and age.

Times and areas for fishing must also be controlled.

If these problems are solved, there will be an appreciable increase in the catch without decreasing fish stocks.

Although increasing the mesh size would result in a drop in the catch for a short period, later the benefit would come in the form of improved weight and quality of the catch, when the escaped fish have had a chance to mature.

Thus the catching of Barents Sea cod at the age of nine instead of eight years would raise the total catch weight by 25 per cent, although the numbers of fish caught would fall by 20 per cent. Catching sea bream at the age of seven years instead of the usual four or five years would bring an increased yield of 75 per cent.

Other important measures to boost the sea harvest include prevention of water pollution with industrial waste, particularly oil and radioactive waste; the ensuring of unhampered migration of fish to spawning grounds; releasing fry in open waters, and the introduction of new marine species.

In many countries scientists are working to find the best methods of breeding fish, invertebrates and algae (nutritious "plant life" that grows in the sea). Rearing of many species of fish, molluscs and crustaceans is going on in laboratories in Japan, the United States, Canada, Britain and some other countries.

Oyster farms account for a good proportion of the world output of this shellfish, Japan alone producing more than 200,000 tons a year.

British scientists have recently discovered how to hatch flounder larvae in running water, and the Norwegians are successfully experimenting with cod.

Soviet specialists, too, are conducting extensive work along similar lines in the Black Sea, growing oysters and breeding mullet in brackish lagoons. This work is just beginning in the Soviet Pacific area.

Algae such as chlorella are also attracting the attention of Soviet researchers, who are working to organise algae cultivation on a wide scale.

Unfortunately, they are concentrating almost exclusively on freshwater species, but marine algae deserve attention too, as they are a most important source of nutrition and also a raw material for the chemical and pharmaceutical industries.

Algae reserves in the seas of the Soviet Union are estimated to run into tens of millions of tons, including almost 100 species useful for human and animal nutrition and for industrial purposes.

In the next few years the USSR Academy of Sciences will have to set up marine biological research stations on the Sea of Japan and the Pacific coast.

This article has only touched on some of the problems requiring solution, if there is to be a more rational and efficient utilisation of the ocean's food resources.

Harvest or plunder?

1. *Anchovies*
2. *Herring*
3. *Cod*
4. *Scad*
5. *Tuna*
6. *Flounder*
7. *Mackerel*
8. *Scorpion fish*
9. *Whalas*
10. *Invertebrates*
11. *Shark*
12. *Salmon*
13. *Sturgeon*

a) 0.5 million tons

b) 1 million tons
c) 2 million tons
d) 5 million tons
e) 10 million tons

f) (Whita) Fishing on continental shelves. (Black) In open sea.

A LAND OF POTTERS

by Konstantin Konstantinov

condensed from the newspaper SOVIETSKAYA KULTURA

After the spring rains, artists from Samarkand go to the site of ancient Afrosiab. They roam slowly about the steep slopes, stick in hand, searching for crocks, the golden-green or dark brown Afrosiab crocks that still ring true, undimmed by time.

There are places renowned for their carvers, their carpenters, blacksmiths and sculptors, but Soviet Central Asia is a land of potters. There, ceramics are much more than tiled walls or household utensils. A lump of damp clay evokes memories of many generations of potters of bygone days.

"For I remember stopping by the way
To watch a Potter thumping his wet clay:
And with its all-obliterating Tongue
It murmur'd—'Gently, Brother, gently, pray!'"

But nothing disappears without a trace . . .

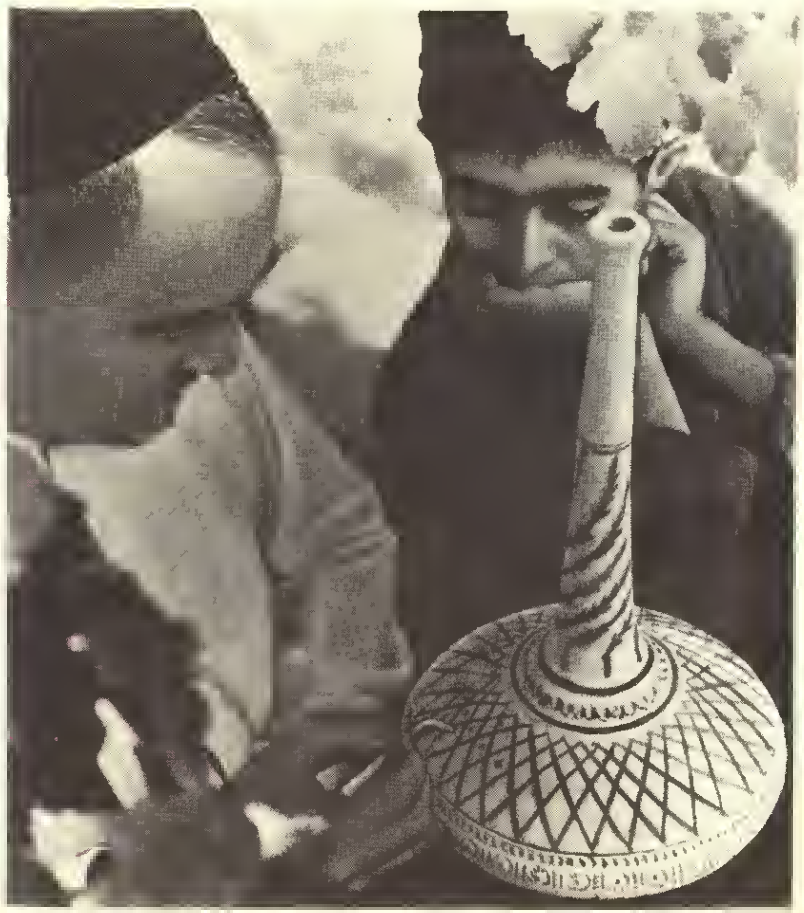
"I think the Vessel, that with fugitive
Articulation answer'd, once did live,
And drink; and that impassive Lip I kiss'd,
How many Kisses might it take—and give!"

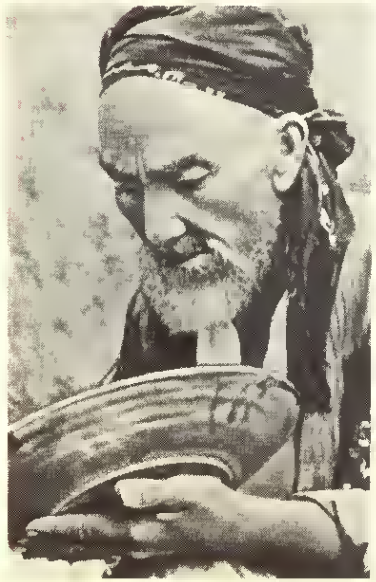
The lamp of Omar Khayyam went out eight centuries ago. A myriad lamps have glowed and dimmed since; many generations have passed; but still the potters' wheels are turning, fire is burning in the kilns, and human hands are kneading clay.

In the picture below, Umar Jurakulov bends his fingers and says:—

"My father, Jurakul, his father and the father of his father—they were all *alouchis:* they worked with fire."

In spring Umar likes to work in his little courtyard with the sun's rays—the precise colour of antimony oxide after firing—gleaming through the shiny leaves of an old grapevine.





Cooking pilaff calls for skill if not real talent, but no skill can save a pilaff served on an ordinary plate. Only a flat ceramic dish will do.

Throughout the Urgut district, pilaff is served in dishes made by Makhkam Oblakulov (seen at work on the left). They are deep yellow and are decorated with a pattern in the centre and green birds around the edges.

Shahrisabz means "Green City" in Uzbek, and when you catch sight of it from the Takhta-Karacha mountain pass it really does look green. Beyond a misty, boundless plain you can see a dense dome-shaped mass of vegetation, with massive ruins cutting a swathe across it.

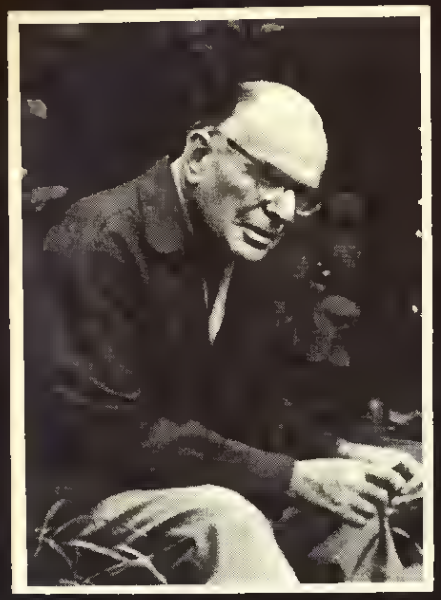
The ceramics of Shahrisabz are quite different from others. They glow with every shade of brilliant red and brown.

The doyen of the local potters is Karim Khazratkulov (left). He is nearly 80 and has made innumerable dishes, tea bowls and jugs and, what is even more creditable, he has taught scores of other potters.

"Our job is a difficult one," he told me. "An apprentice who is frightened of clay will never make a good potter."

I found Faizulla Abdullayev (above) at home in his workroom. Dishes decorated all the walls. He was not used to visitors and his shyness was obvious, but I could not hide my admiration. I was unable to tear my eyes from his unique and beautiful work.

This exquisite china set is on display at the Applied Arts Museum in Tashkent.



Konstantin Paustovsky, one of the finest Russian writers of the century, died this year at 76.

Paustovsky had a rich and varied career both before and after his first short story was published in 1911. Tram driver and medical orderly during the First World War, he fought in the Red Army during the Civil War and subsequently worked at a metal plant and on various newspapers before being called up in World War Two.

Yet Paustovsky was always first and foremost a writer, one of the generation that laid the foundations of Soviet literature. His long short stories *Kara-Bugaz* and *Colchis*, enthusiastic paeans to the people building a new life, remain to this day among the best Soviet literary works.

Paustovsky was a prolific writer and a superb master of the Russian language. He was also a man of tremendous integrity. A tireless traveller, who loved his own country and people deeply, he had at the same time a great respect for the peoples of other lands.

Paustovsky wrote *Channel Lights* shortly after his visit to England in 1964.

CHANNEL LIGHTS

Notes on a visit to England from KONSTANTIN PAUSTOVSKY'S book *Alone With Autumn*

I have only just returned from England, and yet several impressions from my journey are already sufficiently a part of the past for me to write about them. Of course, the worst thing one can do is to write under the impact of one's initial impression, for

the result is a gaudy picture, like fresh oils on canvas, where all the highlights are still shiny and glossy. They have not yet been softened by the mist of time and gentle oblivion.

The mist of time, doubtless, resembles the soft pale-blue mist that fills the vales of rural England, that mist which gives such majestic flowing outlines to the oak woods abandoned forever by Robin Hood. It gives a deep, dark tone to the waters of lakes and slow-flowing rivers with their flotillas of swans.

Even the numerous castles look spectral in this haze, as if built of porous pumice. Time has covered their walls with a hoary hue, and one feels one could easily pick up such a castle and hold it in the palm of one's hand.

Time seems calm somehow in England, despite the country's turbulent past so full of violence and bloodshed.

Today sand-blast pumps wash the black of ages, the patina of history, from old buildings. Some people approve, others object. In my opinion the light, wax-like London is more pleasant by far than the somewhat sombre black-and-white London of only yesterday.

That famous fog

England turned out to be quite unlike what I had expected. My first acquaintance with her immediately destroyed all my preconceived ideas formed way back in my youth, and no doubt connected with Constable, Walter Scott and Charles Dickens.

Far from being wrapped in a purple cloud of smog, London was bathed in ocean air and perfectly respectable sunshine. In this air even the massive hulk of St. Paul's looked as if it had been transplanted here from Florence.

The English, too, were a surprise —simple, fun-loving people, polite, punctual and reliable.

But the fog has not disappeared from London; I once got talking to a taxi-driver on the subject. After a moment's thought he said, "Look, if you want to see our famous fog, I'll call for you at your hotel later this evening and take you over the other side of the river" ("the other side" being the South Bank). From there, he assured me, I should be able to see the Houses of Parliament and Westminster Abbey in a real fog.

That evening we got out of the taxi and leant against the wet granite parapet of the Embankment. The tide had begun to rise on the river and the long barges were no longer reclining on the slimy bottom, but bobbed on the restless water along with a multitude of dim river lights. Ahead of us through the wreathing mist, streaming up the Thames from goodness knows where and mysteriously lit by a heavy red flame, the stone apparition of the Houses of Parliament floated majestically.

Then Big Ben boomed out over all London, and it seemed to resound over the whole of "misty Albion" splashed by Atlantic breakers.

I often awoke in my hotel room in the middle of the night, and without turning on the light to look at the clock lay in the dark waiting for Big Ben to strike. And every time, without fail, my heart was gripped as if in a vice by the feeling of being lost in a strange and not always comprehensible land, and a sensation of close darkness floating endlessly past like water in the night. Where does time go?

Finally I would manage to drop off, but my sleep would be as shallow and precarious as the pale, timid glow of the English dawn peeping out of the grey half-lights of desolate wet shores.

Infinite variety

In the British Museum I saw the water-colours of that famous painter of sea-scapes Turner, and was amazed at the variety of low windy skies and raincloud in his brilliant paintings. Yes, life must have been far from comfortable on this island, where all the damp and moisture of our hemisphere converges to condense.

However, as I have already said, we were lucky, and the country was warmed by October sun, as if smiling to itself at these foreigners, so amazed at the warmth and luxuriance of its pale-green meadows and orchards. In a tiny garden in London with a low wall of shiny black bricks, I saw a fig-tree ripening, just as one might expect to see in the Crimea, somewhere on the outskirts of Yalta.

In Ann Hathaway's garden at Stratford-upon-Avon, which was simple, bright and cheerful, I caught the balmy smell of unknown flowers that were surely tropical. The smell of a garden that has been dozing for centuries penetrated the bright wood panelled rooms of the cottage and mingled with the odour of old English polish.

The staircase creaked helplessly and plaintively beneath the visitors' feet, as if protesting: "Why are you tramping about like that where Shakespeare used to tread? You know very well that in his modesty and child-like shyness he stands back to let you pass at the narrow corners, and is quite confused at the sight of bearded, bare-foot beatniks and hip-wiggling young ladies with their hands thrust deep into the pockets of their shorts."

Perhaps I'm wrong in imagining Shakespeare to be so easily confused, but the whole atmosphere in Stratford-upon-Avon makes for this impression. In any case, I have no douht at all but that Shakespeare would be flabbergasted at a meeting with Bernard Shaw. The blunt, unpredictable Irishman could put anyone out of their stride.

G.B.S. and England

While I was in England I constantly found myself measuring the country against Bernard Shaw for size and finding it rather a tight fit for him. His satirical mind needed space to caper freely in. But the longer I was in England, the clearer it became that Shaw was a truly great Englishman in his innermost nature, with his hawk-like mind, his merciless irony and constant bombshells.

He was a walking gunpowder plot. His explosions of wit and irony could take place without warning at any time of the day or night. Any line

might suddenly fly up into the air and delight or shock you for a long time to come.

The performance of "Henry V" at the Memorial Theatre at Stratford-upon-Avon—a new building guarded by armadas of swans on the nearby shady river—was a little strange. It was rather strange and not quite real to us foreigners, like the somewhat cold and misty streets of the little town itself, so quaint and empty, with the faded black rose in the porch of the church where Shakespeare is buried.

The play about the king who conquered France was rather strange because the Shakespearean action, always on the border of anger and grief, and the ardour of the heroes, their passion, tears and laughter, seemed somehow locked up within the walls of the theatre where the emergency lights dutifully cast their subdued bluish glow and the audience, polite and reserved, hardly applauded even the most splendid acting.

In this very theatre, on just such a deceptively silent night, one should watch Shakespeare's great tragedy about Lady Macbeth, that tragedy of treachery, blood and female beauty enmeshed in crime.

We returned to London via Oxford, and spent a night in the ancient university town that is like a vast stone-paved monastery courtyard.

Such merry names

It was hushed, bright and cheerful in the hotel, the walls of which were hung with faded, fine-woven carpets. In the homely lounge an electric fire blushed shyly and struggled manfully and successfully with the penetrating night cold.

We were recalling the names of old inns passed en route, delighted by their quaint names that seemed straight out of Stevenson or Walter Scott—names like "The White Hart", "The Merry Rooster", "The Rose and Crown"; delighted because not for a long time had we met such merry, old-fashioned names.

In inns with names like that it ought to be dry and bright and smell of heather or lavender. Old paraffin or gas lamps should be burning, casting a warm glow, and a great boar should be roasting on the spit.

Thousands of clerks

England is somewhat old-fashioned, and this is especially noticeable in the dress of the City clerk. When work is over in the City, the streets suddenly move back to the times of Pitt and Thackeray, as thousands of clerks, all dressed in the same dark suits, with the same bowlers, carrying the same neatly rolled black umbrellas, set off briskly for home, and one somehow imagines the shillings jingling in their pockets, or worthless farthings in the pockets of the less well-off.

The complicated English monetary system is enough to make one despair. Why a pound has 20 shillings instead of ten, why a shilling has 12 pennies is a total mystery. Why are there four farthings in a penny? One can really understand the value of a farthing only when somebody angrily tells you your life's not worth a brass farthing.

Here, then, is the City, where within the gloomy walls of banks and offices the countless wealth of England, accumulated over the centuries, is hoarded, clinking in the safes.

Once from the top deck of a cherry-red bus going through the City I caught sight of a small narrow house, like a cigar-box end-on, with a sign on the front that read "Dombey and Son".

Professors and taxi-drivers

Of course, it would be foolish to imagine that this cursory sketch of the external features of England covers a hundredth of what I saw and felt on my journey. There is a lot more to write of, and above all the people, from brilliant Oxford professors to equally brilliant taxi-drivers and sailors. These lines are but fragments —the first impressions. And one of the things that produced the strongest impression on me was the English countryside.

We approached Oxford towards evening as the sun was setting on the gentle rolling hills of England. I have never seen such a sunset in all my life. The light was an extraordinarily beautiful faint yellow, one pure delicate expanse like a vast shroud cast across the heavens.

If the comparison were not somewhat artificial-sounding, I would say that the Oxford sunset was the colour of a peeled banana. Here and there pinpoints of starlight twinkled. Clumps of oaks and elms, like massive biblical tents, stood out against the sunset, a fantastic funeral procession of trees.

The distant contours of the English countryside are as ethereal as the most delicate colours lightly painted on china by the most gentle artist's hand. And everywhere amidst the woods and fields, along the wayside, grow hawthorn and roses—the emblem of England.

The English countryside is full of pale glowing air. This was bound to produce an artist who would try to capture the light of the land. Whistler filled England with the splendour of inshore waters, the colours of the fading sunset, the azure of calm seas, the broad glow of evening lights and their reflection in the still harbour waters.

Such is the English countryside. But not always. There are times when pure red copper, bronze, purple and the threatening darkness of the ocean night blaze forth in it. These are the colours in which England appears in the paintings of Turner, that brilliant artist and sea-shore wanderer.

I can't help envying him. Roaming the shores of England is an occupation that is sometimes gay, sometimes sad. I tried it, but only a little, merely on the banks of the Thames and near its mouth. Yet even that was enough to get fascinated by the study of "misty Albion".

On a magic ribbon

To sit on the balcony of an inn overhanging the Thames is surely one of the most fascinating occupations in the world. One has only to drink coffee, tea, whisky or Coca-Cola and look on. You just sit looking,

and before your eyes, as if on a magic ribbon, a great world shipping lane passes, an endless chain of ocean-going ships, passenger vessels, barges carrying coal and wood, tankers, tugboats, and sailing boats with such high masts that their tops pierce the shroud of low clouds as they go.

"'Andsome Man"

The innkeeper's wife at the "Yacht" in Greenwich was a Frenchwoman from Lyons, with the darting, lively eyes of bustling Lyons. "Look," she said, "there goes a ship under your Soviet flag. A very 'andsome man. Look!"

Along the Thames, blocking out the far City bank, the "'andsome man" made his way majestically past Tower Bridge, the giant snow-white timber vessel *Mezenles* with her broad funnel and high superstructure at the stern.

The sailors at the next table waved their hats and cried "Russian, Russian!", smiling in our direction. The *Mezenles* slowly snaked her way along the winding river, and disappeared in the distant haze towards our northern shores.

Later on we wandered through the bright green parks of Greenwich, which were spring-like in spite of its being October. Pigeons came and perched on our bands and stared us in the eye, begging for seed. The hard-working tugs drove a light wave before them, and clocks ticked away regularly in the old houses. The silence of the past hung over famous Greenwich.

I saw many people of various walks of life and classes in England, from the workers on the building site across the road from our hotel, assembling an enormous building like watch-makers putting together the parts of a watch, to the Duke of Wellington, and from the kindly, modest publisher Mr. Collins to the delightful 11-year-old liftboy Rodgers. I just couldn't get used to the idea that he really worked and gave his earnings to his mother.

When the B.B.C. asked me to say a few words over the air before I left, I mentioned Rodgers. This caused quite a stir among the liftboys and messengers of Regent Street and St. James's, and Rodgers decided to plaster his hair down with a whole bottle of brilliantine in honour of the occasion. It didn't help, and his curls stood up on end as before, but Rodgers was happy.

Nowhere have I seen such sharp contrasts between the different classes as in England. Even the most indifferent person could not help noticing.

The London-Paris express left Victoria Station in the late evening. At Dover the waves were lashing the sea-wall. The coaches rolled on to the lower deck of the ferry-boat and were made fast with chains and cables.

We had a rough crossing. A Channel storm was raging. The coach squeaked, creaked and leapt with fright, its buffers clanked, and it seemed about to go overboard at any moment. Cold, unfriendly waves pounded the sides of the boat incessantly.

In the middle of the night the steward knocked on the door and said, "Excuse me, Sir. But I thought you wouldn't want to miss the Channel lights and the lights of Dunkirk".

I imagined this must be a tradition since the war, to look at the Channel lights and the lights of Dunkirk, the lights of the town where a great war-time drama took place, where the British Army was surrounded by the Germans and cast back into the sea.

Dunkirk Armada

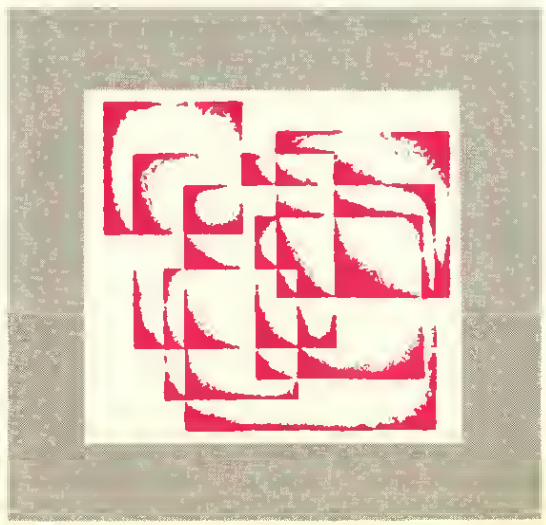
Yet it was saved. Everything that would float was rushed to Dunkirk. The Channel beaches were crowded with thousands upon thousands of people, helping stupefied and half-drowned men out of the water. On reaching the shallows off the English coast, the boats turned without stopping and sped back to Dunkirk for fresh loads of men.

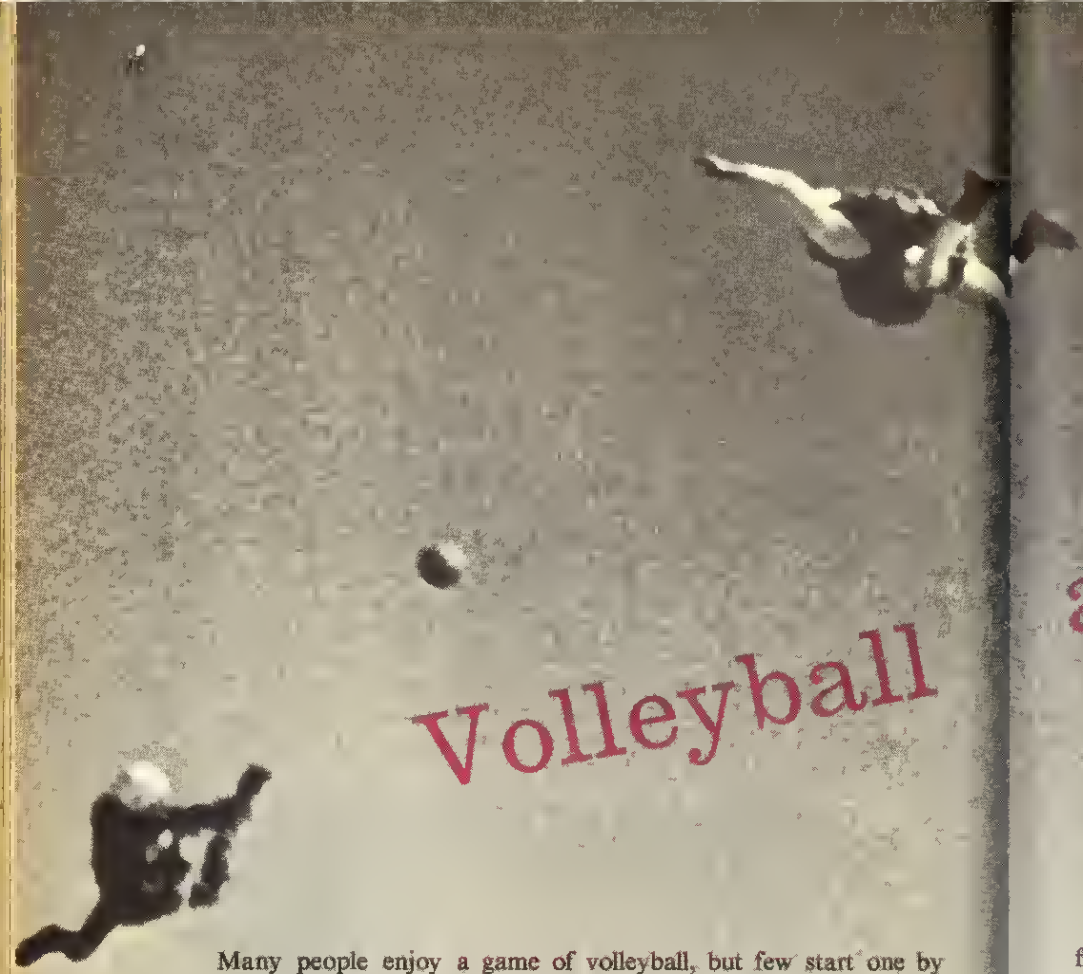
I came out on deck and involuntarily drew back. Out of the pitch-black darkness ahead, blinding masses of shining crystals floated towards our ship, thousands of sleepless pulsating lights. A gigantic white conflagration over the horizon flowed towards us.

They were the mysterious lights of Dunkirk, the Channel lights, burning, like an ever-living flame on the spot where regiments of young Englishmen perished under a rain of death from the skies.

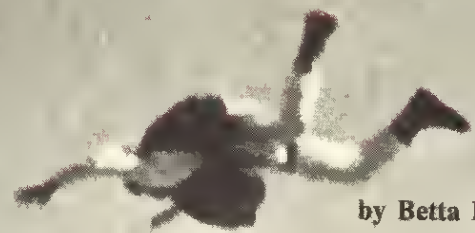
On the deck around me people stood silently gazing towards these lights, eternal flames over the graves of thousands of unknown but unforgotten soldiers.

I looked around. The Channel buoys burned brightly, steadily peering through the mist, behind which, as though behind a fortress wall, England lay.





Volleyball above the clouds



by Betta MATUTITE

from the magazine SPORTIVNIYE IGRY (Sports Games)

Many people enjoy a game of volleyball, but few start one by taking a plane and putting on a parachute.

Boris Tsvetkov, Vladimir Mironov, Alexei Safran and Vladimir Barskov do. Their brief but exciting game takes place while hurtling through the air at 115 miles per hour. They have the whole wild blue yonder to play around in, with a sand-filled ball which weighs over 12lbs.—just right for the purpose.

When the AN-2 plane is over the jumping area at a height of 7,500 ft. the four figures come tumbling out, one after another. A fifth follows with a cine-camera. He is Robert Silin, himself a world-famous skydiver and holder of the title Master of Sports.

Fifteen seconds. . . 20. . . the game is well under way. The acrobats soar and swoop after the ball. Point your toes and press your arms flat to your sides and you plummet like a stone. . . stretch your arms out and spread your legs parallel to the ground and the rate of descent is slowed. . . a slight twist of the hand and the angle of the fall is changed. . . turn your palms to a 45 degrees angle and the downward plunge becomes a spiral.

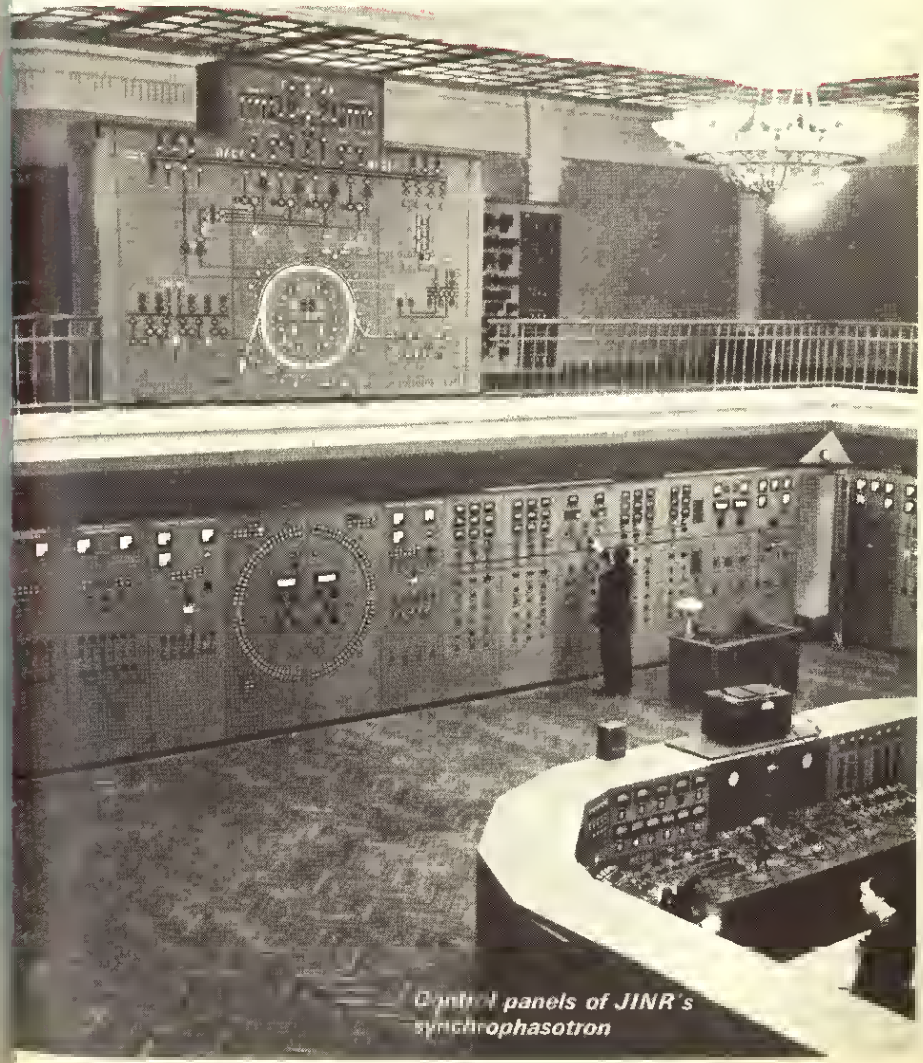
Silin's task, filming the thrilling spectacle, is especially difficult because his hands are fully occupied with the camera. A careless move of his body can send him spinning off at a tangent.

Twenty-five seconds: the sportsmen have fallen almost a mile. The ground looms closer. At 30 seconds the players glide apart, so as not to interfere with each other when the parachutes open. A few more seconds, and five parachutes billow out at 2,000 ft. and the men slowly float to earth.

for scientists—

The world's first synchrophasotron

town of their dreams



Control panels of JINR's synchrophasotron

The Hotel Dubna

Compiled from the Soviet Press

People said Rabelais was raving when, 400 years ago, the great French writer described the city of his dreams. There, everyone was to be free from the worry of earning his daily bread to do the work he loved best, creating priceless, though not always tangible, benefits for humanity.

But a city like this *does* exist today, in the midst of a forest on a formerly uninhabited island washed by the waters of the Volga and Dubna Rivers, in Central Russia. It is Dubna, the science town founded only 12 years ago as the headquarters of JINR (the Joint Institute of Nuclear Research).

JINR is significant not only as a centre of original research in nuclear physics, with many important discoveries to its credit. It could also be called an advanced prep school for research personnel of the several countries which established and maintain the institute.

Dubna was the alma mater of laboratories in Sofia, Prague, Bucharest, Budapest, Ulan-Bator and Hanoi, which work in close collaboration with JINR, so that there is a constant two-way flow of scientific information. Physics today has penetrated into such depths of the microworld that without an exchange of ideas and joint experimentation, progress is practically impossible.

This bustling town of 15,000 inhabitants is the only one of its kind, and its name is now a byword. The story of its creation and significance

Academician Vladimir Veksler

is an interesting and salutary one.

When the discovery of radioactivity first shook the world, literally and figuratively, physicists, chemists and mathematicians by the score plunged head-first into the fascinating world of elementary particles. Coming up for air, so to speak, each one found that he was alone in this boundless ocean, and that even with the combined efforts of all the scientists in a whole country it would be well-nigh impossible to "make port".

Hence the idea of creating an international research centre, where scientists of the world could meet and pool their "brain capital" to attack the most complicated problems.

First, money was required. The USSR took the initiative to organise an international conference with Albania, Hungary, Bulgaria, the German Democratic Republic, the Democratic Republic of Vietnam, China, Mongolia, Poland and Rumania; and JINR was set up.*

Each country contributed proportionately to its means to the building and development of the institute. The USSR contributed 47 per cent of the capital and Bulgaria, for instance, two per cent. But this is where differences end, for equal rights are enjoyed by all participating countries, the rules stating that all may make use of any equipment the institute offers, and that any of the participating countries may have free access to all available materials, and the right to study the results of any research that is carried out.

An Executive Committee of Representatives, elected from all participating countries, directs JINR. This body appoints the president, who happens at the moment to be Academician Nikolai Bogolyubov, a choice made not because of his Soviet citizenship, but because of his great scientific authority.

Vice-presidents are Academician Christo Christov of Bulgaria and Professor Namsarain Sodnom of Mongolia. A Scientific Council, also international in composition, plans and controls JINR's scientific programme.

It is a basic principle of JINR that all research there must be directed exclusively to peaceful aims, and any country ready to accept its rules can join.

Quick-thinking genius

When you have said that Dubna is a town of scientists, you have said practically everything. But then, to understand the town you must try to understand what makes a Dubna researcher.

You can either picture him as a sort of hybrid (a "typical" JINR researcher, let's say), or you can find the type in an individual. Vladimir Veksler's work and character seem to meet the case.

Academician Veksler's discoveries are many, but we can limit ourselves to one of his achievements—it was due to him that the

* Its equivalent in Western Europe is CERN, centred in Geneva.

synchrophasotron* was created, a machine which is to modern physics what the microscope once was to hiology.

Veksler's pupil, Vladislav Sarantsev, writes of him, "Close contact with Veksler made me regard physicists from a different angle. They are usually divided into theoreticians and researchers. Strictly speaking, Veksler was neither. He was a genius.

"At one time I was of the opinion that among my contemporaries there were no geniuses. Einstein and Maxwell were quite another matter.

"Veksler was not very well acquainted with mathematical apparatus, and during the last 10 to 15 years hardly conducted experimental work at all. But he had extraordinary intuition and a faculty for thinking in physical categories.

"His intuition permitted him to evaluate the conclusions of theoreticians and point out their mistakes. He was a walking electronic machine. Habitually sunk in thought, he stimulated in his subordinates the habit of

* Like the cyclotron, the synchrophasotron is a huge installation in which the electromagnetic field makes charged elementary particles gather great speeds. In both these installations the particles' trajectories are not straight lines, but crooked.

In the cyclotron the trajectories are spirals, whose radii grow with every new coil. In the synchrophasotron, they are circumferences of constant radii.

Academic council in session

Radiochemists at work

Group of Dubna physicists awarded Lenin Prize in 1967. On the left, Georgi Flyorov

quick thinking, with no 'putting things off till later'.

"He devised the principle of autophasing while standing in a bread queue just after the war.

"At the end of a working day he would turn to a colleague and say, 'I have an idea. See what you can do with it when you have time'. An hour later he would telephone the colleague and ask him if he had done anything with the idea."

Right up to the time of his death in 1966, Veksler headed JINR's Higb Energy Laboratory, tbe significance of which may be judged from the fact that it was and still is JINR's largest laboratory, with a staff of almost 1,000. A giant accelerator with a giant magnet, weighing 36,000 tons, has been constructed in it. It requires the same amount of power as is generated by a medium-sized power station. Its main component alone measures 195 ft in diameter.

Niels Bohr, the famous Danish physicist, who visited Dubna in 1961, said of its creator, "The construction of such a gigantic, modern instrument required colossal insight, boldness and, I would say, great courage."

These words fit both Vladimir Veksler and the scientist-type for whom tbe Joint Institute of Nuclear

Research was originally founded.

Bicycles, of course, have nothing to do with nuclear physics, except that this is the way the physicists of Dubna get around. They have their cars—but cars poison the air and make so much noise that you can't hear yourself thinking. So they stand idle in their garages until their owners want to travel the 77 miles to Moscow or to some other distant point. While in Dubna, kindly use Shanks's pony or a push-bike!

Holidays on foot

None of this bothers the scientists, as most of them are keen hikers, anyway. They spend their holidays in the taiga, the Pamirs, the ice-fields of the Tien Shan or Caucasus mountains, in the Central Asian deserts or on the islands of the distant Pacific.

These people, who spend endless hours watching the blinking lights of complicated control panels, in front of oscillograph screens flashing green lightning, or sitting at their desks, are drawn to nature and sports requiring great physical energy, as witnessed by these facts:—

JINR researchers form one of the best water-ski teams in the country.

Dubnarians regularly compete in yacht races and win.

They conduct extraordinary slalom contests, the skier being compelled to write his name with his tracks in the snow on the hillside. Professor Chuvilo has it easy with his reasonably short name, but for Professor Blokhintsev, ex-director of JINR, his long name spells trouble!

To answer the question, "What exactly is being done at Dubna?", with a list of projects would take up too much space, and in any case be inadequate, so let us turn to a typical laboratory giving the essence of the place. This is the Nuclear Reactions Laboratory, headed by Georgi Flyorov, Corresponding Member of the USSR Academy of Sciences.

What nature can't do

Almost everything a man can pick up and feel has been scientifically investigated, and all natural substances of the earth's crust, either in pure form or combination, have been described. Nevertheless, physicists are coming to believe in the probable existence of hitherto unknown elements.

These are mainly what are known as the transuranium elements, which are incredibly difficult to produce in the laboratory and are impossible to "capture", since they have a life of only a fraction of a second.

Impossible?

Well, at a Dubna symposium in 1968 on the structure of the atomic nucleus, Professor Weisskopf, Director of CERN, came out with the epigram, "Flyorov can do anything that nature can do, but I am not convinced that nature can do everything that Flyorov can do."

Research workers in his laboratory have procured isotopes of Element 103, have discovered Elements 102 and 104, and have gathered convincing material on the synthesis of Element 105. Experiments carried out in synthesising Element 104 were so complex that only one atom of the substance was procured after the accelerator had been operating from five to six hours, and it had a life of only half a second.

In the whole period of research, the scientists have been able to procure only about 150 atoms. Yet this is a lot, for no other laboratory in the world has yet been able to synthesise Element 104.

For this scientific achievement, Georgi Flyorov and his assistant, Ivo Zvara, the Czechoslovak radiochemist, were awarded the Lenin Prize, the USSR's highest award.

It may be asked, "What is the good of one atom that breaks up as soon as it appears? Is there any sense in such colossal expenditure of money and energy?"

Georgi Flyorov replies, "Yes, there is. To achieve something that you cannot get in nature is interesting in itself. Besides, we believe that beyond uranium there can exist a region of stable, super-heavy nuclei, possessing such extraordinary qualities as, for example, super-hardness, super-durability or super-heat-resistance.

"Moreover, this research leads to discoveries of profound importance. Nuclear reactions require a stupendous amount of power, which we still procure from minerals. We are searching for new ways that will give us the energy we need without exhausting the earth's mineral and water resources.

"The 'super-qualities' of the transuranium elements may well be the key to this abundance of energy."

We have merely sketched *one* research project of *one* of JINR's laboratories, without mentioning the Nuclear Problems Laboratory, the High Energy Laboratory, the Laboratories of Theoretical Physics, Neutron Physics, or the Computing Technique and Automation Laboratory. They all deserve separate attention.

Dubna has magnificent technical equipment, and until recently it could boast the most powerful accelerator in the world, but now this honour can be claimed by the town of Serpukhov, where an accelerator has been constructed that generates 70,000 million electron-volts. This is seven times as powerful as the Dubna accelerator, and twice as powerful as the most powerful in the United States.

But JINR's significance has not suffered from this, according to Valeri Biryukov, scientific vice-secretary of the Institute. He says that no matter how well-equipped the Institute may be, it cannot be all-powerful—there are no such institutes, and cannot be.

Physicists are interested in the investigation of familiar particles in new conditions, as well as in the discovery of new particles. Each accelerator has its own specific qualities, and this necessitates testing a particle in different accelerators, or creating an accelerator with "flexible" qualities, such as does not yet exist.

Consequently, the Soviet Government has asked the country's scientists to take part in research with accelerators operating in Serpukhov, Kharkov and Erevan. This suggestion has been accepted, and a small branch of JINR is being established at Serpukhov.

Scientists enjoy outdoor activities in their spare time. Sports are both useful end healthy—in all seasons

DUBNA IN FACTS AND FIGURES

The Joint Institute of Nuclear Research has about 3,000 employees, including eight Academicians, 30 Doctors of Science, and 127 Masters of Science.

Every year the Institute holds from ten to 14 conferences on physical problems of the atomic nucleus and elementary particles.

In the past ten years, the Institute has published and distributed more than 2,500 papers containing scientific reports, to more than 1,000 addresses in 36 countries.

Street in Dubna

DUBNA: CORNUCOPIA OF SCIENTIFIC DISCOVERIES

JINR research workers have:—

- ☐ Experimentally confirmed one of the fundamental laws in physics—the charge symmetry and charge independence law of nuclear forces.
- ☐ Proved the correctness of the law of causality, for atomic nuclei, the most important of contemporary theories.
- ☐ Constructed the world's first cyclotron with a spatial variation of the magnetic field.
- ☐ Constructed the world's first synchrophasotron.
- ☐ Discovered a new elementary particle, antisigma-minus-hyperon, the first experimentally-discovered antihyperon.
- ☐ Discovered chemical Elements 102 and 104.
- ☐ Discovered the nuclear qualities of light.

And all this in the short space of 12 years.

ST. BASIL'S HAS A FACE LIFT

—from the newspaper MOSKOVSKY KOMSOMOLETS

St. Basil's Cathedral, which stands in Moscow's Red Square, was built for the Russian Czar Ivan the Terrible more than 400 years ago. According to legend, when it was completed Ivan lived up to his nickname and had the architect blinded, so that he could not build another.

Now it is time for St. Basil's to undergo major renovation.

Tbe Cathedral's domes have had to be repaired many times over the centuries, as the parts made of iron quickly rust, necessitating replacement every seven or eight years.

Scaffolding bas now gone up around the famous edifice again, so that the iron-clad patterned domes may be given protective plating of durable copper.

The job will take about 40 tons of copper. The pieces are hand-forged to templates, and after being riveted are mounted on the domes. The work should be finisbed by the end of 1969.

YOUNG DAYS OF AN ANCIENT PEOPLE

condensed from the magazine OGONYOK
and the book
ARMENIA YESTERDAY, TODAY AND TOMORROW
by Suren MOVSESYAN

"Armenians call their country Ayastan—land of the Armenians. There is another name: Karastan—land of rock. More than 20 mountain ranges, with 900 peaks, cross this land. Roughly two-thirds of present-day Armenia is occupied by mountains, solid rock. And the remaining soil in the course of centuries has been trampled into rock by the hooves of conquerors' horses." So writes Gevorg Emin, a contemporary Armenian poet.

ARMENIA, lying in the south of the Soviet Union on the borders with Turkey and Iran, has a territory of only 11,500 square miles and a population of about 2,500,000.

The origin of the people is somewhat obscure, but there appears to have been an Armenian community in the first millennium B.C. Inscriptions of King Darius mention the country of Armina and its people, the Arminiya. Herodotus included the Armenians among peoples who paid tribute to the Persians.

If one may speak of the injustice of history, then the Armenians have been the greatest victims. Their fate was truly tragic—centuries of alien rule and continual attack by strong, warlike neighbours.

Armenia was an independent state during the second and first centuries B.C. Then the Romans conquered her and were followed by Parthians, Sassanians and Arabs.

The Armenians managed to regain statehood during the ninth and tenth centuries, but it was again destroyed by the Seljuks in the eleventh century, and for the next nine centuries the country was ruled successively by Mongols, Turks and Persians. Armenia did not regain political independence until November 1920, when she became one of the Soviet republics.

There is a legend which tells how the Seljuk conquerors were able to single out Armenians. Tbey placed the captives around fires, and the Armenians would give themselves away by piling on brushwood. This desire to "keep the fires burning" has helped the Armenian people to preserve their culture and their love of their homeland.

★ ★ ★ ★ ★

"I, Argishti, son of Menua, have erected this majestic fortress and have given it the name of Erebuni, to glorify the land of Biaina (Urartu) and instil fear in my enemies." This inscription was made on a huge basalt wall of a citadel by King Argishti of Urartu in 782 B.C.

Ruins of that citadel are being excavated and restored today. They are all that remain of the time when Erevan, the capital of Armenia, was called Erebuni—the clay-built houses have long since vanished. This year Armenia celebrates the 2,750th anniversary of the foundation of her capital.

Erevan, the modern capital, is less than 50 years old. Its university opened in 1920 soon after Soviet government was proclaimed in Armenia. The first multi-storied housing blocks were erected in 1922, and Armenia's first research centre, the Institute of Tropical Medicine, was established in 1923. A hydropower station was built in 1926.

Alexander Tamanyan, the architect who drew up the plans for the new Erevan in 1924, was called a dreamer. The population was then 30,000, and he anticipated tbat it would grow to 200,000. In fact his estimate was conservative, for today 750,000 people live in Erevan and the number is steadily increasing all the time.

It is an extraordinarily beautiful

New Armenia spreads her wings

Above:
Semyonov Pass in the Caucasian Mounteins

Right:
Snows of Mount Arerat peep through morning mist over Ereven

city. Tamanyan chose the soft varicoloured Armenian tufa (limestone) as building material, rather than the more conventional glass-and-concrete. Tufa hardens as soon as it is put into position by the builders, and its colours range from a pale pinky white to grey-blue. The many shades used are selected by the builders themselves, and their taste and discrimination have made Erevan a joy to behold.

Streets and buildings are planned so that the evening breeze from the mountains blows away the sultry air, and the dry heat is tempered by masses of greenery and plenty of water, which seems to quench the centuries-old thirst of the city.

Erevan's water supply system is 30 years old; it has been improving

all the time, and in a world competition in Paris, recently, Erevan water won first prize for taste.

Grigori Asratyan, Mayor of Erevan, is concerned about the city's rapid development. Eleven thousand apartments are built every year, and such a rate of growth could lead to standardisation. "We must build fast, yet remain faithful to traditions," he told the city's young architects. "Just see how beautifully your predecessors did their job. . . ."

Erevan sets the tone for other cities in the Republic. Since the Second World War their number has grown from four to 23, and even the newest of them bear the gracious hallmarks of antiquity, their buildings being adorned with stone lacework in the style of Armenia's ancient temples and fortresses.

Above:
Eternal flame at monument to victims of 1914–15 massacres, in which hundreds of thousands of Armeniens perished

Right:
Foyer of the Drama Theatre, Erevan

Gold and copper have been mined in Armenia since time immemorial, although the easily-worked gold deposits were exhausted long ago, and in 1920, when Armenia established a Soviet government, copper-mining was the main industry—the only others were a brandy distillery and a few small tanneries.

Today Armenia's non-ferrous metals industry is vital to the economy of the entire Soviet Union. Copper deposits have been found to be among the nation's richest. Molybdenum, lead, zinc, gold and silver are extracted. The huge, grey cliffs of what is known as nephelite, which until recently were thought to be industrially useless, produce aluminium and other valuable things.

With her highly-developed non-ferrous metals industry and with sufficient skilled workers, Armenia has built up precision instrument, electrical and electronic industries.

Her new chemical industry has as

its base the local rock. It produces a wide variety of goods, such as semi-conductors, insulators, crystals and even silk-soft fabrics.

Armenia's foreign trade gives the key to her economic achievements. Britain buys electrical measuring instruments, watches and water pumps; Federal Germany buys chemicals, watches and brandy. France purchases precision instruments and Italy, machine tools. In all, Armenia exports 150 items to 72 countries.

Although ousted from first place by industry during the last 25 years, Armenia's agriculture still remains an essential part of the primary production. Armenian peaches are famous, and her brandies are popular throughout the world.

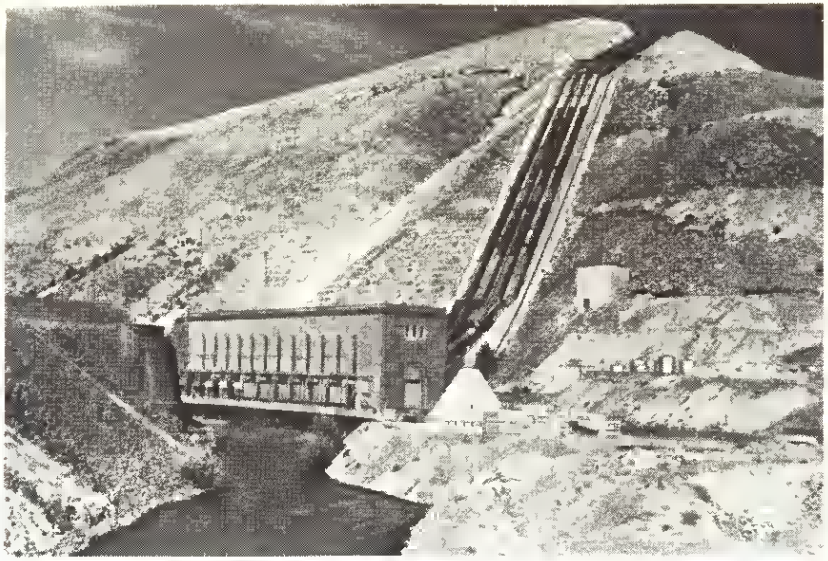
The area under cultivation, once confined to the lower parts of the country, is continually being extended to the higher, cooler, mountainous regions by mechanisation and the introduction of advanced agricultural techniques.

Cattle-breeding, which accounts for 25 per cent of the farm output, is carried on high up in the mountains, and most of this work is done by women. In summer it is usual for the whole female population of a village, led by the oldest and most experienced woman, *tantikin,* to move to the mountains. The men stay behind for the heavier work in the fields.

To overcome the effects of the arid climate, a widely ramified network of canals has been built, which now water 625 million acres, and will irrigate more land as it is reclaimed.

Continued on page 109

Lenin Square, Erevan



Gyumush Hydropower Station

Chemical worker . . . all smiles

In the Burakan Astrophysical Observatory on Mount Aragats, one of the world's largest

Above: Ruins of the Zvartnots Temple, deting from A.D. 7

Below: Pedestal Island—freak of nature or flight of fancy?

An ancient church on Lake Sevan

Today, one of the most serious problems is how to save Lake Sevan, which lies above Erevan at an altitude of 6,500ft.

Until the Thirties, only the River Razdan flowed out of the lake, but loss of water by evaporation was 20 times greater than the amount which flowed down the river to the dry valley below.

Then, with industrial construction booming, tbe lake was tapped to meet the enormously increased demand for electric power. At the same time its waters were used to irrigate large parts of the Ararat Valley. All this boosted Armenia's economic growth, but the water level of the lake began to drop at an alarming rate.

Saving their beautiful lake became a matter of great concern for all Armenians, and they have adopted a bold plan to do so.

The Government has appropriated 50 million roubles for the project to save the lake. A 30-mile tunnel is being built through the mountains to the River Arpa, which is to be turned to flow into the lake. Tbe work is going ahead fast, because Sevan's danger level is a mere 5ft. away. Experts and builders from the Ukraine, Central Asia, Siberia and even tbe Far East are all helping on the job.

As for the Republic's power requirements, tbey are met by the integrated Transcaucasian electricity network and the gas pipeline from neighbouring Azerbaijan; the waters of Lake Sevan are not needed any longer.

Saving Sevan has top priority in Armenia, combining as it does conservation of natural beauty and economic advance— immediate benefits and a heritage for future generations, common sense and romance.

Important medical research is being carried out in Armenia at the Erevan Cardiology Institute, where a piece of the heart muscle from a chick embryo has been grown in an artificial medium. New cells developed within 24 hours and linked together to form muscle tissue.

This process has been filmed, and it is fascinating to see these fibres, grown in an alien environment, contract in much the same way as the heart does.

These experiments may be vital to the effective treatment of heart disease. Cardio-vascular diseases are the top killers today, and treatment is not always effective, despite the variety of methods practised. Armenian doctors believe that the key may be in the affected heart muscle, and they consider it will be possible to replace diseased muscle tissue with artificially-grown tissue.

In their first experiments the artificially-grown tissues died within minutes; now they live as long as seven weeks.

The Cardiology Institute is one of the Republic's 130 research centres, and Armenian research is of world significance in the fields of mathematics, astrophysics, physics of cosmic rays and elementary particles, radio physics, electronics, computing engineering, chemistry and radiobiology.

Above:
Inside Echmiadzin Cathedral (A D 4)

Residence of Catholicos Vazgen I, the head of the Armenian Church who is also pictured opposite

The Burakan Astrophysical Observatory, headed by Dr. Victor Ambartsumyan* has one of the world's largest electron accelerators, and the Cybernetics Institute has developed several new types of computers.

On the humanities side, history and philology are most popular in Armenia.

Armenia's scientific and scholarly thought have their roots deep in antiquity. Anani Shirakatzi demonstrated that the earth is round seven centuries before Copernicus, and offered a scientific explanation for the eclipses of the moon and the sun. But history directed the energies of the Armenian people into the channels of survival rather than creation.

At the turn of the fourth century Mesrop Mashtotz, the son of a peasant in the village of Atsik, invented an alphabet which is still used in its original form. Until 40 years ago, however, only about 10 per cent of the people knew that alphabet. Today the population of Armenia is among the best educated in the world.

*See *Sputnik* for May, 1968.

Indian palm leaf manuscript

The untold riches of the MATENADARAN

from MATENADARAN by Kim Bakshi and THE COLOURS OF TRANSCAUCASIA by Leonid Volynsky

LIKE a fortress or an ancient temple hewn out of grey stone, the Matenadaran towers over the city of Erevan, capital of the Republic of Armenia. It is in fact a temple, a temple dedicated to learning. The Matenadaran houses a magnificent collection of ancient manuscripts and rare books, some dating back to the fifth century A.D.

Among its treasures is a Bible known to scholars as the "queen of translations" because of its beauty, exquisite workmanship and textual accuracy.

Here, too, are kept the original manuscripts of the great 10th century philosopher, Avicenna; an Armenian translation from the Greek of Euclid's *Principles* which antedates the Latin; translations of the works of ancient thinkers, the originals of which have long been lost.

Medical prescriptions of antiquity evoke an interest among pharmacologists today. In the fifteenth century, Armenian scientists noticed the curative properties of mould, and deduced the law of conservation of matter.

Chemical treatises offer recommendations on how to smelt gold and obtain magical paints which time, instead of dimming, will make clearer and brighter.

The creation by Mesrop Mashtotz in the year 405 A.D. of an Armenian alphabet of 36 letters had a decisive impact on the development of literature and culture. Many works were translated into Armenian, including those of Aristotle, Plato, Eusebius of Caesarea and the Stoic philosopher, Zeno.

Between the fourth and seventh centuries, historiography, philosophy, poetry, music, the imitative arts, drama and natural science flourished in Armenia; the literary language acquired a stable form.

But the history of the Armenian people is a history of war and bloodshed. Time and again, through the centuries, one invader after another fell upon the country. Greeks, Romans, Persians, Arabs, Turks ravaged the land. Each invasion and final expulsion of the enemy was followed by golden ages of national revival, a flourishing of the arts and crafts and of architecture.

The Matenadaran reflects this history. The pages of many priceless manuscripts are scorched, the dull

Interior of the Matenadaran, Armenia's largest depository of ancient manuscripts

red colour of dried blood stains parchment.

The final pages of a manuscript which a scribe had copied were devoted to a chronicle of the times. They relate of wars, raids in the night, forced exile or the deaths of fellow scribes who devoted 40, 50 or even 60 years of their lives to faitbful copying, to preserving the national heritage of their people for posterity.

The very first printed books in Armenian in the library were produced abroad, in Venice in 1512. This reflects the dispersal of the Armenian people, who fled abroad to escape Persian and Turkish rule and established colonies as far off as Lvov, Venice and Madras.

The Matenadaran displays only a fraction of the 25,000 manuscripts in its collection. Inside a glass case a parchment whicb has turned to stone is exhibited. For centuries the parchment lay undiscovered in a cave, until in the damp limestone conditions it calcified. The parchment is now stone, but the letters still speak.

Another interesting object is a twelfth century "fountain pen" made of glass and fitted with a ball for ink.

There is a manuscript that weighs 1.2 tons—each of its sheets required a whole calf-hide, and the whole of it took 700 hides. To save it in an hour of trial, Armenian refugees cut it in half. One half was taken away; the other buried at Arzrum, in present-day north-east Turkey, where it was found by Russian army officers in the nineteenth century.

At the other end of the scale are tiny fifteenth century manuscripts weighing a mere 18 grammes.

In feudal times the Armenians had a system of musical notation called *khaz*. The Matenadaran has in its possession some 1,000 such "musical scores" and words, including 350 collections of church hymns.

These small-sized but very thick books are bound in worn and time-dimmed leather. The notations were done in jet-black ink, with stress-marks in red. In certain places letters stand either above or below the line.

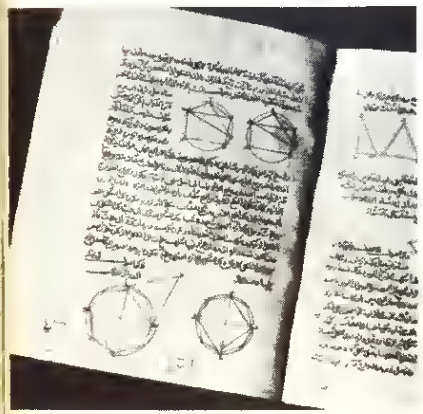
However, the *khaz* presents a puzzle to modern man, because the key has been lost. So far, all attempts to decipher the notation have failed. Scholars of the Matenadaran believe that with the help of a computer the riddle will in time be solved.

But perhaps among the most beautiful works of art in the Matenadaran are the miniatures illustrating a book by King Getum II of Cilician Armenia. The paintings were executed by a monk-artist named Toros Roslin in 1285. His colours are lush —purple, blue, gold, combined with mellow violets and greens. These miniatures are the fountain-head of contemporary Armenian art.

The Matenadaran contains untold riches. There are still texts which have never been examined by researchers. The repository is a living testament of the Armenian people's contribution to world culture.

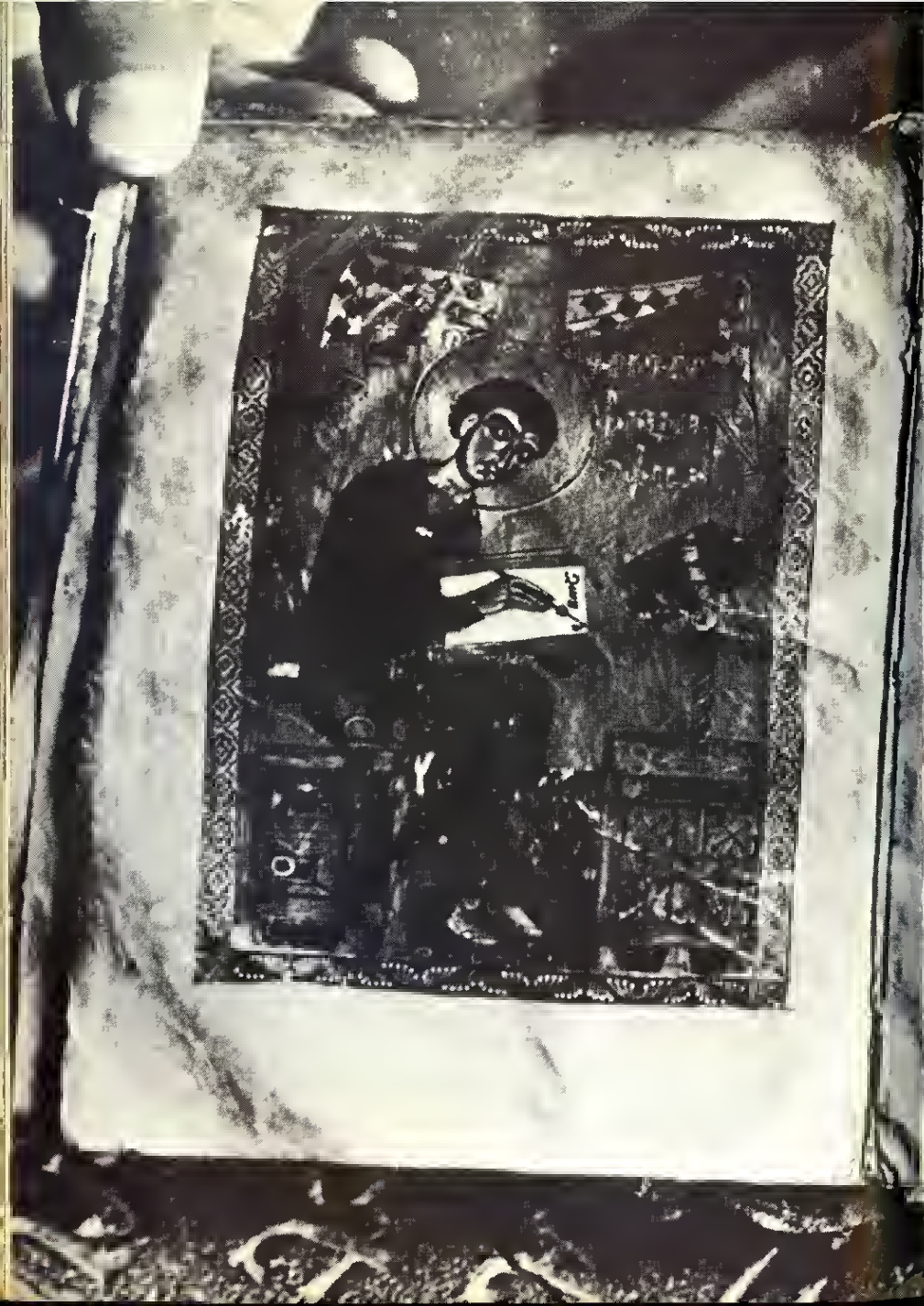
Petrified parchment book found in a cave. . . . The parchment is turned to stone, but the letters still speak

Remnants of handwritten books of the tenth to fourteenth centuries, found in a cave



The original manuscript of the tenth-century philosopher, Avicenna

A thirteenth-century book by Armenian King Getum II, illustrated by the monk-artist, Toros Roslin



Title-page of an Armenian hymn book, with picture of the author, Grigor Narekyatsi

AN EX-WAITER FROM AN OPIUM DEN

ARTEMI ALIKHANYAN, Corresponding Member of the USSR Academy of Sciences, and a leading specialist in electromagnetism, is interviewed by *Smena* special correspondent, Tamara ILATOVSKAYA.

"Reduced to its elementary particles, matter is devoid of colour and odour; one can neither see nor hear it. In this realm everything is unusual. Velocities close to that of light are common. Some particles only exist when moving at this speed; put a brake on their motion, and they disappear. With the help of nuclear accelerators, thousands of researchers are studying the behaviour of elementary particles, advancing quite improbable hypotheses in an attempt to penetrate the mystery of matter."

—from Daniil Danin's book, Ours Is a Strange, Strange World

"YOU ask about my pursuits and ambitions," said Artemi Alikhanyan. "Well, as the French say: 'Cherchez la femme.'

"Here's a picture of ARUS—a real beauty, isn't she? Seven years ago we dug the first shovelful of earth for the foundations of her palace. There are only three such beauties in the world—ARUS, the German DESY, and an American still to be named.

"There is NINA of Britain, but she is of smaller calibre—only 4,000 million electron volts, 4,000 mev. for short. That's an unusual characteristic for a lady, isn't it?

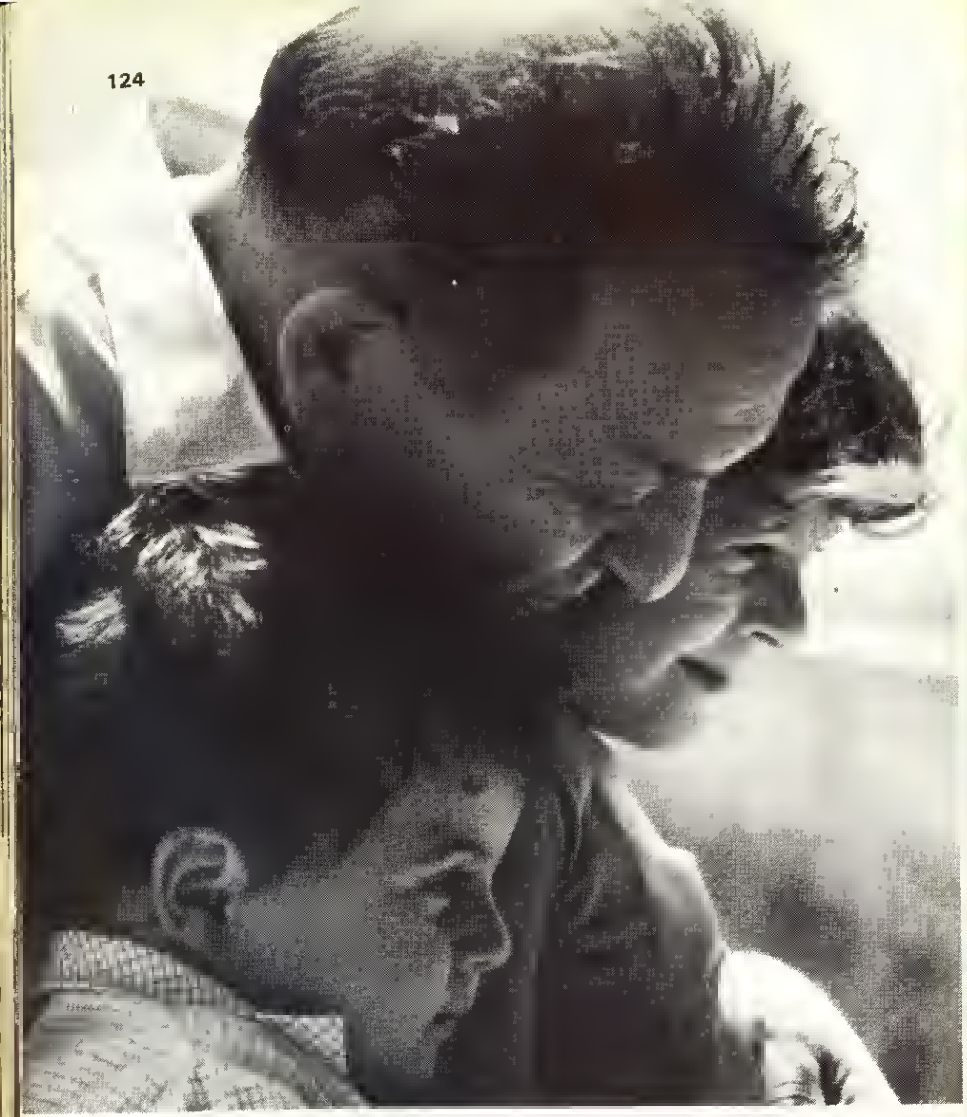
"As a matter of fact, all these beauties are elementary particle accelerators, and they get their names from abbreviations of their official titles: ARUS is the Armenian Accelerator *(Armyanski Uskoritel)* and is 6,000 mev. The almond-eyed, long-haired maiden you see in the picture on my wall is ARUS' emblem, a sculpture by the artist Arto Chakmakchan."

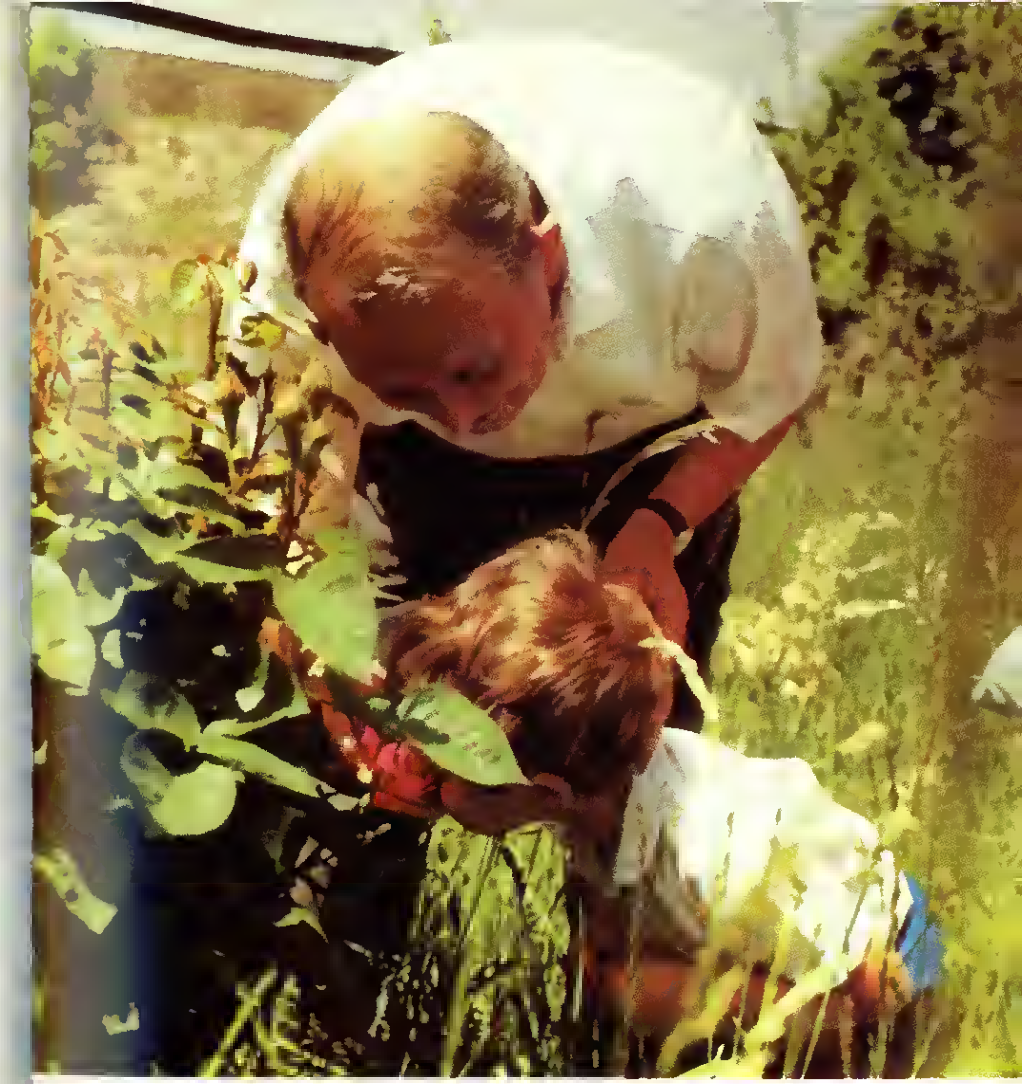
I asked, "Why build a 6,000 mev. electron accelerator when there are already more powerful proton installations?"

He replied, "Some people prefer red wine, others brandy. Translating it into the language of science, a problem can be approached from different angles.

"Elementary particles can be studied in the form of protons or electrons. When protons are bombarded by protons, it is a battle of titans, but the electron has only one two-thousandth of the proton's weight, and its

View of the ARUS electron accelerator





He loves children . . . (above)

. . . and nature (right)

charge is negative whereas the proton's is positive. Electrons 'explore' the proton when they are spread over its surface, and their behaviour enables us to discover the proton's characteristics.

"For instance, we found that the proton is not so elementary, after all—it has a three-layer, onion-like structure. So physicists are now cautious about using the term 'elementary particle'.

"ARUS was in the making for seven long years, and during that time I became a 'father' three times —NINA, ARTEM and ARUS. You know what that means. You always give your children a thought, if only

He loves art . . . (above)

. . . and the camera (right)

a little sometimes. So now I am part-physicist, part-nurse."

Taking two photographs from his briefcase, he showed me a pair of very nice youngsters, a boy and a girl. Nina is the image of her father, who continued proudly, "When my British colleagues were inaugurating

their NINA, they asked me for this photo as her emblem. Now both Ninas are learning about the world, each in her own way."

He caught me glancing at the pictures on the walls, where they glowed with cheerful colour, some seeming to float in small grey rain clouds or reflecting the deep azure of fading evening skies.

"That's by Saryan," he said, pointing to one of them. "The grey colours are Krasnopevtsev's. The study in blue is Sternberg's and the sculptures are by Arto, who chiselled ARUS in stone. I've been collecting

these treasures all my life; the artists have been my good friends."

I asked the professor what he felt about the tendency some people have to write off art as a beautiful but hopeless anachronism, confining their interest to science fiction, sport, chess and psychological quizzes. Did he think such narrow-mindedness was fatal for the scientist?

"Fatal or not, it's awfully dull," was his reply. "As for me, I prefer to live among actors, musicians, poets. I was fortunate enough to meet Mayakovsky, Akhmatova, Pasternak and Zabolotsky.

"Mind you, it wasn't just good fortune; I sought the meetings, as I simply needed them.

"I was mad on Pasternak's poetry, and I remember how I went to see him at his home at Peredelkino, near Moscow. I looked around the village for a long time until I found his house. A grey-haired man opened the door, and I said I would like to see Boris Pasternak. 'That's me,' he said, and asked me in.

"We sat up all night, with Pasternak reciting. One piece I recall was from Tsvetayeva: *'In every life there comes an hour, when pride, a heavy armour, falls. An hour of tutelage, to everyone inexorably it calls. . . .'*"

Professor Alikhanyan said that of all the poets, he felt especially close to Pushkin, but he now finds it more and more difficult to turn to him.

"You see," he said, "he has accompanied me all my life, and now every one of his poems arouses memories, at times very sad ones.

"Remember that, *'Loudly sobbing, the jealous' maiden upbraided the youth . . .'* Shostakovich set the verses to music. The evening I heard it for the first time, a friend of mine died. But, of course, tbat's only something personal. . . ."

He returned to my question about the need for electron accelerators.

"With electron accelerators we can obtain very high energy gamma beams," he explained. "Gamma quanta are electromagnetic radiation, like light.

"In the theory of ligbt, everything seemed as clear as day after Maxwell and Einstein, but now it turns out that at very high energies gamma rays, waves though they are, begin to behave like a stream of particles—it takes a physicist to appreciate this. It's rather like finding out that a European you've known for years is actually an Indian nabob."

Scientific truth

I asked him wbat he considered to be the chief means of establishing scientific truth, and he said tbat as far as the process of scientific development was concerned, he believed the level and availability of engineering means to be the main factors. Science was as blind as a mole witbout computers, accelerators, precision instruments and so on, as experimenters knew only too well.

On the ethical side, he referred to his own experiences as a young man, recalling the attitude of Academician Abram Ioffe, with wbom he began his career as a scientist.

"He never interfered with his subordinates' way of thinking," said the

professor. "He let them do whatever they considered hest. He believed in people, and he was not mistaken.

"He was a hrilliant organiser and scientist. He put his heart and soul into science, and respected other people's knowledge and inclinations."

"What hrought you to Ioffe?" I asked. "Outstanding scientists usually follow a straight and predetermined course—school, university, academy. You must have gone to school during the Revolution?"

An opium den

"No, at that time I worked as a waiter in a semi-legal opium den in Tbilisi, Georgia, and sold newspapers in the evenings. My father was an engine driver and didn't earn much, and we were a large family.

"One evening, when I was 16, I was walking home with my papers. Tbe wind was blowing and there was a hard frost, very rare for Tbilisi. Suddenly I saw a man lying unconscious in the snow.

"I dropped my papers, helped him to come round, and took him home to his place.

"He was a young doctor, just starting, but very well-informed and very friendly. We got talking and be said, 'Listen, boy, you've got a fine head on your shoulders. You shouldn't be wasting time selling papers, you ought to go to school.'

"This doctor tutored me in mathematics, geography and Russian, and helped me to get into school, straight into the senior form, I left the opium joint and began to work as a fitter on the railway.

"In the railway depot I met another fine fellow, an old acquaintance named Ter-Stepanov. He had heen one of the leaders of an uprising that broke out in Leninakan, in Armenia, in May 1919, and my father and I joined in—we went in an armoured car to have a shot at the Cossacks.

"But the uprising was soon crushed and we had to hide Ter-Stepanov in our hasement for several days. Then my father agreed to take him to Georgia in his engine. I went along too, as assistant.

"At every station the counter-revolutionaries searched the engine, looking for anything suspicious. Ter-Stepanov would jump off in good time, and walk around the station. Then once past tbe station we would pick him up without stopping.

"Near the border some Armenian nationalists climbed aboard. My father had been prepared for this, and had let the water out of the tender so that our passenger could hide there. Luckily the track went downhill, so we could manage without the water.

"Ter-Stepanov later got the railways union to send me to Leningrad University. In Leningrad I was quite heside myself with joy, and wrote out three applications—to the Polytechnical Institute, the Navigation School for sea-going captains, and the university.

"It was hard to choose hetween mathematics and the sea, but mathematics won in the end. Then in my second year at university, when they began to give us lectures on electromagnetism, I gave up mathematics and fell permanently in love with physics.

"In my third year I got a joh at Ioffe's lahoratory at the Leningrad Physics and Engineering Institute. It was like this: I did some work on crystals, and the paper was a success and was puhlished in a German journal. Everyone congratulated me, and I was in the seventh heaven. I was devoted to physics, and dreamed ahout the most unlikely experiments.

"About that time, one of Ioffe's assistants resigned and left a vacancy. My application received unanimous support.

"To grasp the full measure of what I felt, one has to know what Ioffe's institute meant to physicists. Some people even went to work there as watchmen, just to have access to the lahoratories.

"We didn't have enough money or enough to eat, hut we were brimful of youthful self-confidence, optimism and energy. The friendships struck in those days were lasting.

Sharing an attic

"Once a hoy came from Byelorussia—a shy, helpless sort of chap. His name was Lev Artsimovich, and today he is a Memher of the USSR Academy of Sciences. He had nowhere to live, so I invited him to share my attic.

"For 18 months we took turns to sleep on the only bed. He used to say, 'Science is a means of satisfying one's curiosity at government expense'."

I remarked: "This curiosity must cost quite a lot nowadays?"

The professor said, "I wouldn't say that. The Americans have worked it out that science since the time of Archimedes has cost mankind no more than the value of 10 days' output of modern world industry."

"What advice would you give your future colleagues, the students?"

"None. I agree with Shaw that advice is like castor oil—easy to give, but devilishly unpleasant to take. But one thing I would say: you must strive for what really appeals to you, not for what seems easy and convenient.

"The worst thing ahout training young researchers, to my mind, is the barrier between professors and students. They need close contact. Then it's like striking flint against flint, as one intellect kindles another.

"A student is often at a loss to know what to read, what trend to follow, how to reconcile the university syllahus with his own scientific interests.

"I like the Harvard tradition. Once or twice a week the professors have lunch at the students' refectory, where all are equal, regardless of age or standing. When I was at Harvard I used to lunch at the refectory every day and I almost starved, I had so many questions to answer. But I found the atmosphere most agreeahle."

I asked the professor which of modern scientists he most admired and he replied, "Of my friends and colleagues, probahly Lev Landau *(see article about Landau in last month's Sputnik).* He had a rare

intellect and unbelievable intuition.

"Do you know how he worked? He would lie on a divan, his eyes fixed on the ceiling, no pen or paper in his hands. Then he would get up and jot down the solution. If you have any idea of the complexity of the problems he was working on, you will see what that means. Just imagine pages and pages covered with physics formulae.

"A young physicist once made a very interesting study. His professor was absent at the time and nobody else would take on the job of checking it because the problem was so complicated. But Landau took the paper and returned it in a few days with the words, 'I have checked the first part. Everything is correct. There can be no mistake in the second part.'

"He had grasped the logic of the solution. He was always incredibly kind, but merciless to stupidity and intellectual dishonesty."

I sounded the professor out on what he felt was the most attractive place in the world for him, and he said, "Places I've never seen; Spain, for instance." But when I confessed that I had counted on turning the conversation to Aragats, he exclaimed, "Oh, you mean my Aragats odyssey!

"On the eve of the war I organised an expedition to the Pamirs. You see, up in the high mountains cosmic rays contain 10 times more particles than at sea level.

"We had everything packed, clothes, food and instruments, when the war broke out. The expedition consisted mainly of Leningraders, and Leningrad was having it very hard at that time.

"We divided the food up among ourselves and each went to where he was needed. I went to Kronstadt to help deal with the German magnetic mines.

"Our institute was moved to Moscow and then to Kazan. What use could I be there? I loaded the expedition gear on a ship and floated down the Volga to Astrakhan.

From there I tramped home to the Caucasus.

"In 1942 our group climbed Aragats for the first time, carrying heavy rucksacks and with strict orders to become a mountain guerrilla detachment should the Germans break through.

"Next year we made another ascent. Then again, and again. A 10,750 ft. climb is not an easy promenade, when you add the luggage. And yet we managed to conduct some good experiments.

"Previously, it had been believed that cosmic rays consisted of electrons and positrons, later joined by mesons. We found another component, protons. That was of great importance for the science of fast particles.

"After the war we went on with our work. Then began the epic of the particles we called varitrons, later termed pi-mesons. Particles which live less than one hundred-millionth of a second! We discovered them with the aid of a mass spectrometer which was unique for the time.

"Many physicists thought the new particles too short-lived to travel the long way in the spectrometer at Aragats, and doubt was expressed about our experiments. But a few years later American physicists detected pi-mesons with a new apparatus, and determined their lifetime and mass. Only then did it become clear that our apparatus had recorded these very particles."

I tried to imagine what it is like to know that you are right, and not to be able to prove it to your colleagues. It takes courage to get over the disappointment. Those who lack it probably leave science, or at least cease to be genuine researchers.

"What is more important for a researcher," I asked the professor. "Good luck or perseverance?"

"It isn't good luck that brings success," he replied. "It attends those who work, particularly those who work hard. The best luck falls to those who work hard and are talented. Was Bohr lucky? And Fermi? Einstein, Newton and Rutherford were among the 'luckiest'."

"You promised to tell me about your greatest ambition," I prompted.

"Didn't I tell you? Of course, it's a 50,000 mev. electron accelerator. Just imagine how the gamma quanta will behave at such energies!"

Alikhanyan at work

THE SIEGE OF LENINGRAD

A quarter of a century has passed since Soviet troops broke through the Nazi blockade of Leningrad.

In those grim, incredibly trying days I was in charge of the food supplies for the city and the Leningrad front, under the State Defence Committee. I was prompted to write *The Siege of Leningrad* by many experiences in those years.

The book deals with the most crucial period of the blockade, from September 1941 to February 1942.

by Dmitri PAVLOV,

Minister of Trade of the Russian Federation

Dmitri Pavlov

THE SIEGE OF LENINGRAD

PRELUDE: June, July, August

In December, 1940, Hitler announced at a secret conference of his army commanders, "It is to be expected that the Russian Army will suffer a greater defeat at the very first onslaught of the German troops than the Army of France suffered in 1940."

Six months later, on the morning of June 22, 1941, Nazi troops attacked the western borders of the Soviet Union, from the Baltic to the Black Sea, intent on penetrating deep into the country.

That sudden concentrated blow of a well-trained, fully-equipped Nazi army placed Soviet border units in a critical situation. The Soviet troops sustained heavy casualties and, despite determined resistance, were forced to retreat. From June 22 to July 10 tbe Nazis advanced at a rate of 16 miles a day.

The Nazi armies were divided into three groups: South, Centre and North. Moving in the direction of Leningrad was Group North, 29 well-equipped divisions totalling 500,000 men. In the sky they had the support of 1,070 aircraft of the First Air Fleet. Field-Marshal von Leeb was in command of this group.

At tbe time of Hitler's advent to power, von Leeb was a 50-year-old lieutenant-general in command of the Seventh Military District. Hitler treated him with reserve because of von Leeb's religious convictions and imprudent statements concerning the National Socialists. But von Leeb was an experienced professional army man and had the backing of the officers' corps, so Hitler placed him in commmand of the Second Army Group.

In 1938 von Leeb participated in the occupation of the Sudetenland. In 1940 the troops of Group C under his command broke through the Maginot Line. Victory over France earned him the title of Field-Marshal and the Iron Cross.

According to Hitler's plan, Leningrad was to have fallen by July 21. On July 10 Nazi armoured troops broke through the Soviet front, south of Pskov and advanced in the direction of Luga. They were less than 130 miles from Leningrad. The offensive was mounted by 23 divisions, 340,000-strong and armed with 6,000 guns and 326 tanks.

From the north, seven Finnish infantry divisions were advancing through the Isthmus of Karelia. Strength of the Soviet troops at that time was only 150,000.

On July 11, at the height of the battle, a new Commander of the North-Western Front, Marshal K. Y. Voroshilov, arrived in Leningrad.

Fresh Soviet units were in the process of being formed. The Baltic Fleet sent 80,000 men to fight on land. The population of Leningrad formed ten divisions of their own: in that People's Army, youths who had never used a rifle before fought alongside veterans of the Russian Civil War of 1918-22.

The volunteers went through a short course of military training and were rushed to the front. The inadequate training increased the casualty rate, but the grave situation at the front precluded lengthier training.

As the Nazis approached, masses of peasants and villagers left their homes, destroying crops and driving away cattle. The roads were jammed with refugees. Most of them settled in Leningrad.

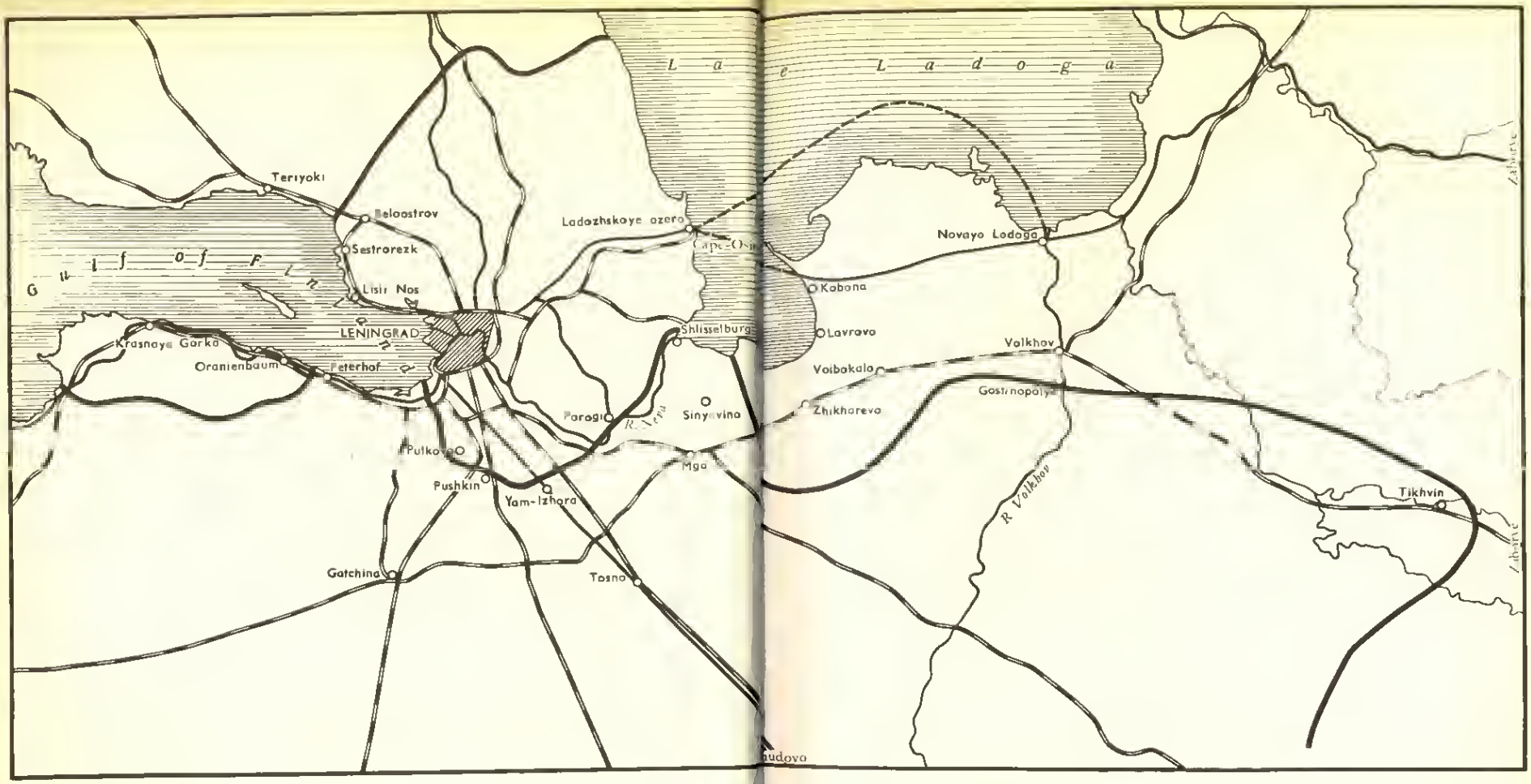
On the morning of August 21 the Front War Council, the city Communist Party Committee and the Leningrad Soviet of Working People's Deputies issued an appeal to all Leningraders to maintain good organisation and discipline, fight panicmongers, cowards and deserters, "meet the enemy with valour and give him a devastating rebuff."

Responding to tbe appeal, the entire able-bodied population turned out to build a defence belt around their city. Some 500,000 people, mostly women and adolescents, built over 388 miles of anti-tank ditches, 15,000 pillboxes and about 22 miles of barricades before winter set in.

A new committee was organised, headed by the Secretary of the City Communist Party Committee, A. A. Kuznetsov, to supervise the construction of the defence lines. It was given authority to place orders with factories, mobilise equipment and people.

Both soldiers and the civilian population were ready to give their lives to defend Leningrad. The resistance of the people grew, and the German rate of advance was slowed to a mile and a half a day. If the Nazis had forced their way into the city, every house would have become a fortress. Leningrad's industries, bridges and public buildings were mined and the population was trained in street fighting.

On August 21 enemy units occupied Chudovo and cut the Leningrad-Moscow Railway. Eight days later the Nazis captured Tosno. On August 30, after fierce fighting, they



seized the large railway junction of Mga, cutting off Leningrad's railway communication with the rest of the country.

September

In July and August only a small percentage of Leningrad's population was evacuated. Most of the evacuees were the families of workers in those industries which had been dispatched east at the very start of the war.

Early in July the city began the evacuation of children. But where could they go? Several trainloads of children were moved to the Yaroslavl region, but the greatest number was sent to the pre war children's holiday centres of Luga and Gatchina—this was precisely where the enemy were advancing.

The danger remained unrealised until the Nazi armoured troops had passed Pskov and were racing towards Luga. Then the children were returned to Leningrad and some were taken deep into the rear, to remain there for three years away from their parents, who in the meantime went through inhuman privations at home.

Some members of the local authorities regarded refusals to leave Leningrad as demonstrations of patriotism, took pride in it and involuntarily encouraged people to stay. "Our population is ready to work at the front but not to leave Leningrad," went the current saying.

Only drastic administrative

measures could force people to leave, and the authorities were reluctant to resort to them. All in all only 400,000 were evacuated before September. But Leningrad was flooded with 100,000 refugees from the Baltic Republics, from Pskov, Luga and Petrozavodsk.

Early in September, when the danger became all too obvious, thousands upon thousands would have liked to leave, but by then the roads were cut. As a result 2,544,000 of the population, including the old and disabled and 400,000 children, found themselves in beleagured Leningrad. Another 343,000 remained in the city's suburbs.

The Leningrad Front and the Baltic Fleet used their own sources of supply, located in the country's central areas, until on August 30 the last railway line was cut. From then on, the two-and-a-half million population, the troops and the fleet had to get their food from the reserve stocks of Leningrad.

Four types of food tickets were issued: factory workers and engineering staff were given "workers" tickets, providing the largest rations; smaller rations were established for office workers; children under 12 received special cards entitling them to greater rations in some items than office workers, but lower in others; the lowest ration rates of all were established for dependents.

On September 2 the City Executive Committee announced the first reduction of bread rations; the workers were given 600 grammes (just over 1lb) of bread a day, office workers 400, dependents and children 300. Soldiers' rations remained unchanged—800 grammes of bread a day for front-line troops, 700 for supply units.

On September 4 the enemy launched the first artillery attacks on Leningrad. Shells hit the Bolshevik and Salolin factories and the Fifth Hydropower Station. The first shell explosions in the streets shocked the population. Everyone knew the enemy was close, but nobody had thought that the Nazis would be able to fire at Leningrad. During the first three days, artillery fire killed 53 people and wounded 101.

On the evening of September 6 an alarming coded telegram arrived at the State Defence Committee. The Chairman of the Leningrad Executive Committee, Pyotr Popkov, reported that the city was left with very little provisions, and requested prompt deliveries of food. But what could be done with the railway lines cut? Leningrad's only connection with the rest of the country was a narrow strip along the southern shore of Lake Ladoga.

On the morning of the same day, 300 Nazi bombers, pinpointing a narrow section of the front, bombed the Soviet troops who were defending the approaches to Shlisselburg. The raids, lasting the whole day, proceeded in wave after wave. At that time our fighter planes were few in number.

On the heels of the air assault, the Nazis followed through with tanks. Enemy superiority in strength forced the Soviet troops to retreat. By 11 o'clock on the morning of September 8, the Nazi armoured troops had split the retreating units. One group, after fierce fighting, crossed over to the northern bank of the River Neva. The other withdrew east. The Nazis emerged on the southern shore of Lake Ladoga and captured Shlisselburg, which lies at the source of the Neva. But the enemy never managed to capture the town's old fortress in the centre of the town. The red flag fluttered over the citadel for 16 months, until the siege was broken in January 1943 and Shlisselburg was cleared of the Nazis.

On the same day, at 6.55 p.m., Leningrad experienced the first massive Nazi air raid. More than 6,000 incendiary bombs were dropped on the city, causing 178 fires. Houses, streets, bridges, people were lit up by the savage flames. Thick black clouds of smoke slowly wound upwards, poisoning the air with the smell of burning.

Night was descending, and it seemed that no force on earth could prevent the sea of flame from advancing.

Fire brigades, civil defence groups and thousands of ordinary workers, after a hard day's toil, threw themselves into the battle against the raging fires. And gradually, before this pressure, the flames retreated, weakened and finally died. Only at the Badayev foodstores the fire continued to rage for more than five hours.

Much has been written about the Badayev foodstores fire. During the siege and immediately after the war it was rumoured that the fire had destroyed colossal amounts of food and was the cause of the famine in Leningrad.

In reality the September 8 fire at the Badayev foodstores destroyed 3,000 tons of flour—enough to last the city one-and-a-half days at the September ration rates or five days at the December rates. And 2,500 tons of refined sugar turned into a syrup which was later used for making confectionery. Thus the sugar losses ran to some 700 tons.

On that ill-fated day, Nazi bombers also dumped their first high-explosive bombs on Leningrad; 12 apartment blocks were destroyed, burying 24 people. Anti-aircraft batteries shot down five enemy planes—the first they had brought down.

The two following days brought more air raids; 84 people were killed and there were 28 outbreaks of fire. More incendiary bombs hit the Badayev stores. Three wooden barracks burned down—one contained machine spare parts, the other two were empty.

The fall of Shlisselburg closed the land blockade ring around Leningrad. Now the only access to the city was by water, as Soviet troops held the 40-mile strip of the south-western Ladoga shore. The problem was that the shore had no well-equipped ports.

The situation was rendered even more serious by the fact that Finnish troops had taken the town of

Continued on Page 144

Workers from the Kirov factory setting out for the front

Women build defence works in city streets

Food supplies for the stricken city unloading at Osinovets, on Lake Ladoga

Pavilion of Pulkovo Observatory, reduced to rubble by Germans

Olonets, then crossed the Sveer river and overrun the town of Podporozhye. The giant pincers around Leningrad were closing. Only a small space separated forward units of the German army, advancing from the south, from the Finns.

Several hours before dawn on September 9, the Nazis attempted to cross on rafts, between Porogi and Sheremetyevo, to the northern bank of the Neva in order, by moving north, to link up with the Finnish troops. If they had managed to cross the river and our troops had lost that vital strip of shore, the delivery of food and munitions both by land and water would have become impossible. But the workers' detachments which guarded the northern bank inflicted heavy losses on the enemy and forced the Germans to retreat.

On September 9 the War Council decided to build, in the small bay of Osinovets, 12 miles north of Shlisselburg, a port for unloading supplies sent across Lake Ladoga.

The shore at Osinovets was covered with a dense forest, which was to provide a good cover for the warehouses, routes of approach and anti-aircraft guns. Close to Osinovets a neglected one-track branch of the Irinovka railway passed, with a terminus called Ladozhskoye Ozero (Lake Ladoga). Leningrad was 34 miles away.

But the lake bottom at Osinovets was inconvenient: shallow, sandy and strewn with huge boulders. It had to be deepened before boats could come in. In the meantime, they had to stay in the roads (water near shore in which ships can anchor), providing a good target for Nazi aircraft.

In those grim days, General Headquarters recalled the Commander of the Front, Marshal Voroshilov.

Voroshilov, a courageous man, who had risked his life time and again, took his recall to heart. Like everyone else, he had no way of knowing that 18 months later GHQ would send him back to Leningrad to co-ordinate break-through operations on two fronts.

Stalin appointed a new commander of the Leningrad Front, General Georgi K. Zhukov, who arrived in Leningrad on September 12.

Simultaneously, Stalin ordered Marshal G. I. Kulik, in command of the 54th Army, to launch an offensive to break the blockade of Leningrad. The ring around the city was weakest between Mga and Sinyavino. Soviet troops inside and outside the ring were only 10 miles apart at this point. That was where Kulik was supposed to strike.

The 54th Army, which was advancing from the east, was about to cut the ring, it was rumoured in Leningrad. A passage was needed, and needed desperately.

The State Defence Committee sent a food supply executive to Leningrad, who helped to carry out an inventory of all the food resources

Italian sculptures from the Winter Gardens "go underground" (right).

available. On September 12, excluding Army and Navy emergency food stocks, there was enough flour to last the city 35 days, meat 33 days, fats 45 days and sugar 60 days.

At the same time, restaurants and dining-rooms continued to sell unrationed food—as much as 10 per cent of the city's daily meat consumption. Hospital patients and inmates of children's bomes were fed without ration cards, which families could keep and use. Tinned crab was sold in unlimited quantities off-ration because people would not buy it for ration tickets which entitled them to purchase meat or fish.

On September 12 bread rations were reduced further. Fortification builders were allotted 500 grammes of bread a day, office workers and children 300 and dependents 250. The soldiers' rates remained unchanged.

The War Council took several food economy measures: commercial dining-rooms and restaurants were closed; the production of beer, ice-cream and cakes was stopped; 8,000 tons of malt, which had been stored at the breweries, were ground into flour at flour-mills; hospital patients were required to turn in ration cards to the administration; all Government livestock, except horses, was to be slaughtered and the meat turned over to the city warehouses; forage grain was to be used as an additive to flour. The City Executive Committee was given sole authority over city food stocks.

The City Executive Committee decisions reduced duplication in food consumption by 80,000 persons per month. Nonetheless, consumption still exceeded food stocks.

Construction of the Osinovets port had just started, but already, on September 12, two barges delivered 800 tons of grain. That was less than half the city's daily consumption, but the news raised the spirits of the besieged.

The passage to Leningrad was very difficult. Railway loads arrived at the station of Volkhov, where they were transferred to the river port of Gostinopolye, to proceed down the River Volkhov to the point where it empties into Lake Ladoga. At Novaya Ladoga the loads had to be transferred again, this time into lake barges—river barges could not navigate the stormy lake.

From Novaya Ladoga the lake barges, often under aerial bombardment, moved to Osinovets to unload in the shipping roads; then the cargo went down a narrow-gauge railway as far as tbe Irinovka branch. That was tbe last trans-shipping point on the way to Leningrad.

On September 15 another five barges arrived with 3,000 tons of wheat. The grain, contrary to instructions, was not in sacks, but had been dumped into the holds.

Procurement officers wanted to have the grain reach Leningrad as quickly as possible, so when they failed to find sacks they sent it in bulk, forgetting that the port was still under construction and that unloading had to proceed quickly between air raids. But it was impossible to unload loose grain swiftly, and as a result three barges, with 2,000 tons of grain, went to the bottom.

On September 15 the city began to bake bread made of mixed flour: 52% rye, 30% oats, 8% barley, 5% malt and 5% soya. The horses were robbed of their oats. But horses were vital to the city and had to be fed something. People chopped young branches off the trees, soaked them in hot water and sprinkled them with cotton-cake and salt. Peat feed was also produced.

Marshal Kulik temporised and hesitated. Finally he launched his belated offensive. The 54th Army attacked the Mga-Sinyavino sector, but the ill-prepared blow proved unsuccessful. The Nazis went over to a counter-attack and the Kulik troops retreated. The blockade continued.

Marshal N. N. Voronov, who was then in Leningrad on assignment from GHQ, later wrote in his memoirs that the chief reason for the setback was that Soviet troops had at that time not yet learned to fight properly.

Zhukov's operations inside the ring were far more successful. He ordered a large additional number of the Baltic sailors ashore, sbifted some units off the Isthmus of Karelia to the particularly dangerous sectors near Uritsk and the Pulkovo Hills, and moved some of the city's anti-aircraft guns out and used them as anti-tank weapons.

The general thus created a well-equipped 50,000-strong army.

Zhukov struck a counter-blow in the direction of Kolpino-Yam-Izhora, aiming at the flank of the Nazi main grouping which was attacking the city. The unexpected blow threatened to break through the ring. To avoid this danger, von Leeb hastily threw his mechanised corps, stationed near Uritsk, against the Soviet offensive at Kolpino.

The offensive was stemmed, but at the cost of the Nazi strike force, which had been prepared to breach the city defences and take Leningrad.

The number of wounded rose both among the troops and the civilian population. It was impossible to evacuate them. The War Council decided that Leningrad University, the Hertzen Teachers' Training College, the Technological Institute, the hotels Europa and Angleterre and many other public buildings were to be turned into hospitals. In this way 19,000 hospital beds were created. The cots, mattresses, dishes were found in warehouses and collected from the population.

The city continued to be bombed and shelled. A particularly intensive air raid took place on September 19. On that day a great number of high-explosive and incendiary bombs rained down on the city, leaving hundreds of families without shelter.

The wounded in a hospital on Suvorovsky Prospect experienced an agonising time. High-explosive bombs hit the large building, and tbe ceilings of the upper storeys caved in. Many wounded were dragged out of the flames and freed from the debris. But 600 people were crushed to death or perished in the flames. It was a heart-rending tragedy.

On the same day several bombs

fell on Gostinny Dvor (a large shopping centre), killing 98 and wounding 148.

At that time the Nazis dominated the air, but Soviet pilots fought gallantly and when out of ammunition even rammed some Nazi planes. Leningraders cherish the memory of their valiant flyers, Pyotr Kharitonov, Mikhail Zhukov and Stepan Zdorovtsev, who rammed enemy aircraft and sent them crashing down to earth.

The Nazis began to drop delayed-action bombs, expecting thus to paralyse the life of whole areas and sow panic. At first we did not know how to defuse such bombs, especially since the enemy used different kinds of fuses.

The disposal techniques left something to be desired. First people dug a hole around the bomb; then an Air Defence member would go down into the pit. Working alone, he would examine the bomb and decide on the best way to tackle the monster.

It took from 15 to 20 minutes to remove the threat of death, but what terrible minutes! Often, to speed the job, the defusers would knock off the fuse grip ring with a hammer instead of unscrewing it with a socket wrench. And sometimes the bombs would explode, tearing the person to shreds. All the same, brave volunteers, including young women, would come forward to carry on the work of their dead comrades.

Once a delayed-action bomb landed in a tramcar terminal in Serdobolskaya Street. It tore through several floors to rest in the cellar.

The people were immediately taken out of the danger zone, which was then cordoned off and the incident reported to the local Air Defence. Soon an AD platoon commander, Anya Kovalyova, arrived on the scene.

The thin young girl, with lively dark eyes, had never before defused a bomb. She examined the hole in the floor, estimated the size of the bomb, lit a candle and crawled into the electric cable cellar, which was only some 2 ft. high.

Once she reached the bomb she began to hammer off the ring. That was a hard job, but she managed it, and unscrewed the detonator.

Back from the cellar, Anya was asked how she had felt in there.

"Just a little nervous," she replied. "I was afraid the candle would burn out before I could unscrew the fuse, but all went well."

During the blockade Anya Kovalyova defused more than 40 delayed-action bombs. Today she works as an engineer in Leningrad.

Nazi aircraft were particularly intent on locating and destroying the Smolny, the Defence Headquarters. But with no success. The central doorway with its columns was camouflaged by a thick net. The roof and the walls overlooking the Neva were painted to resemble the autumn leaves in the surrounding park. From the air the building appeared to be part of the tree tops. The Nazis bombed the square, orienting themselves by the Okhtenski Bridge.

The command post at the Smolny was located underground. At long tables in this crowded room sat telegraph operators receiving reports, queries and requests from every sector of the front, and sending orders and instructions. The room was stuffy; there wasn't enough oxygen.

An important target of the Germans was the water supply system. Without water and a functioning sewage system, a city of two-and-a-half million people would have been subject to epidemics of typhus, cholera and dysentery.

The War Council ordered that the water supply be guarded as a prime military objective. Teams of repair experts were on 24-hour duty. Water supply workers and engineers were exempted from military service. Every day the enemy damaged water mains, but failed to put the water supply system out of action.

Electricity had been in short supply ever since the early days of the siege; there was too little coal. In mid-September the city had to impose rigid limitations on electricity consumption.

Two coal furnaces which had been dismantled before the war were restored; an oil furnace at the fifth Hydropower Station was readjusted for peat burning. Every day 225 railway wagons of peat were delivered from the northern bank of the Neva. Part of the population had to be mobilised to dig peat.

However, the electricity consumption had to be cut still lower. Strategically unimportant factories were shut down. To provide emergency power for the key industries, the War Council had two electric turbine steamers with a full supply of fuel anchored on the River Neva.

September turned out exceptionally warm. The grass in the parks was still green and the leaves on the trees flamed with the colours of early autumn. Instead of the usual raw fogs enveloping the city, the sun shone brightly. But people did not notice the wonderful golden days; their spiritual state was a crying contradiction to the surrounding beauties of nature.

Instead of experiencing happiness and serenity, the people were consumed with anger and hatred for the enemy gripping the metropolis in an iron ring. A grim battle for existence was being waged.

Construction of the port of Osinovets continued and so did deliveries, which, as before, fell far short of consumption. Late in September most of the 2,000 tons of grain which had been sunk two weeks earlier were salvaged. The grain had swollen and sprouted. Before the war it would have been rejected as spoilage, but the times prevented any such write-off. The grain was dried at breweries, ground and used as an additive to the flour.

By decision of the War Council, the suburban population were ordered to turn over to the Government their potato stocks above the level of their own consumption allowance of 15 kilos (about 33lb.) per

Continued on Page 152

Damage to the famous Hermitage Museum after one of the many Nazi artillery bombardments

person per month. The seedling potatoes were all requisitioned.

Wartime laws made concealment of vegetables a punishable offence.

By September 20 the population had turned in 2,352 tons of potatoes and vegetables. But enemy shelling prevented the harvesting of most of the potato crop. As soon as the Germans saw people in the fields they opened fire.

Factory and office workers of Leningrad came to the aid of the collective farmers. Harvesting proceeded at night; people crawled to the fields under cover of darkness and, lying prone, dug out the potatoes.

Nearly all the potatoes were brought in and stored away. The overall stocks now totalled four kilos per head of the population per month until the next harvest.

In September the people received 2.5 litres (about four pints) of paraffin per person for their monthly ration. Nobody knew then that the next issue would not take place until February.

By September 29 the front line around Leningrad took the form of three huge arcs. Two fenced the city from the south and north, forming a large ring enclosing a total area of some 1,100 square miles. The third, 37 miles long, closed the seaward bridgehead on the southern coast of the Gulf of Finland.

That bridgehead was protected by the powerful Baltic fortresses of Krasnaya Gorka and Seraya Loshad, both built before the First World War. Time and again the Germans tried to capture the forts so as to train their powerful guns on Kronstadt, which protected Leningrad from the seaward side. But the Baltic sailors fought heroically and did not yield that small but strategically vital patch of earth to the enemy.

Large-calibre guns of the Baltic Fleet, Kronstadt and the forts maintained a devastating fire on the Germans. A dead German soldier named Goening was found with an unfinished letter to his wife, saying, "I got off lightly during our last attack, though I caught it a bit in the neck too. The Russians fired at us inhumanly. Our regiment has 190 killed, not counting the wounded and missing.

"The Russians ploughed up every inch of the ground with the fire of all types of their weapons, but we emerged safe to earn our first respite—at night we were relieved by a reserve unit.

"For weeks we have had no time to think of ourselves, we have been living like animals, and until today almost without water. We had one meal a day and dry food at that, and long marches. Now we shall have a couple of days' breathing space. Everyone is happy to be able to lay his rifle aside at least for a while."

October

On October 1 the civilian bread rations were again lowered: workers were given 400 grammes a day and office employees, children and dependents received only 200 grammes.

Other food rations underwent less frequent changes. In September and October workers were entitled to 1.5 kilos of meat a month, office employees to 800 grammes, children and dependents to 400 grammes. Groats were allotted at 1.5 kilos a month to workers, 1 kilo to office employees, 1.2 kilos to children and 600 grammes to dependents.

In the same two months, Leningraders received even more sugar and fats than did the inhabitants of other cities: the authorities tried in this way to make up for the low rations of bread and meat. Workers were given 950 grammes of fats and 2 kilos of sugar a month; office employees and children, 500 grammes of fats and 1.7 kilos of sugar; and dependents received 300 grammes of fats and 1.5 kilos of sugar. Workers in other cities were entitled to only 800 grammes of fats and 1.5 kilos of sugar a month.

Bread was sold every day. The customer could buy his portion one day ahead, but stores were categorically forbidden to sell bread for the previous day's coupon. Other food was sold once in 10 days.

From mid-September, canteen diners had to turn in bread and meat tickets for the amount consumed. The only exception was in the key defence factory canteens, where the diners had only 50 per cent of their bread and meat tickets taken away. Other products used in making a dinner were not taken into account. This was a great incentive to the canteen diners and their number shot up.

In September and October the district executive committees opened another 300 canteens. Beginning in October, the food tickets were printed in smaller units. Bread and meat cards were divided into 25-gramme units, specially for canteen diners.

The city executive committee banned the slaughter of old horses by private owners. All horses which had outlived their usefulness went to the city meat-packing plants. Horse meat was sold alongside other meats and went into the production of sausages, which were made according to a simplified formula: horse meat 75 per cent, pork 11 per cent and potato starch 12 per cent. Saltpetre, pepper and garlic were added.

The sausage was excellent. There was no talk of not liking horse meat; horses were few and horse meat was as much of a rarity as any other meat.

The front became stabilised.

The von Leeb troops had driven a wedge 500 miles into Soviet territory. Leningrad was encircled. But there was another aspect to the Hitler army advances. The road of triumphs had become a road of graves. By September 25, Group North had lost 190,000 in killed and wounded; lost 500 guns, 700 tanks. And its principal aim remained unachieved: Leningrad held out, paralysing the advance of a 300,000-man Nazi army.

Winter was coming. An experienced general, von Leeb foresaw the

Continued on Page 156

Rain of death over Nevsky Prospect, the city's main thoroughfare

impending difficulties. To keep on trying to storm the city would mean enormous casualties. But if he abandoned the siege Hitler would fly into a fury.

So the field-marshal, in a diplomatically-worded report, described the hardships experienced by his troops and indicated that, despite losses and bad weather, the attack was proceeding. But, he wrote, Leningrad is well fortified and its defences cannot be overrun without tank and mechanised reinforcements.

The old fox knew that Hitler could send him no reinforcements because the determined resistance of Soviet troops on all fronts had put a tremendous strain on the Nazi army. As an alternative, von Leeb proposed a sustained defence with a view to a future offensive, and concluded by expressing his readiness to perform any tasks the Fuehrer might set him.

The state of affairs around Leningrad displeased Hitler immensely. At a conference in his Imperial Chancellery he shouted in agitation. "Von Leeb has failed to accomplish the task set him and is marking time near Leningrad. Now he is asking for a few more divisions to assault the city. But that would mean weakening other fronts and torpedoing the onslaught on Moscow.

"Von Leeb is incapable of comprehending my design to effect a swift seizure of Leningrad. The city must be starved to death, all supply routes must be cut so that not even a mouse can get in. The city must be bombed mercilessly. Then it will fall like overripe fruit."

October 8 marked one month of the blockade. In those 30 days Osinovets received 9,800 tons of food, while the daily consumption of flour alone was 2,000 tons at the beginning, later cut to 1,100. In other words, in one month enough food was delivered for seven or eight days, while for 22 days the city lived at the expense of food stocks.

Early frosts were predicted. The time was approaching when the lake would not be navigable by water or on ice.

The markets stood empty. Only now and then did some lucky person manage to buy a horse bone of dubious freshness, and that at a fabulous price. Man's only source of food was his ration card. It was more valuable than money. Consequently, the attitude towards the distribution, care and registration of ration cards should have been as strict as towards the issuing of currency.

However, early in September instructions for issuing ration cards were frequently violated. People who joined the Army sometimes left their cards with their families instead of turning them in. At many factories, office employees received the rations of a worker. Numerous cards were issued to children who had been evacuated from Leningrad.

If a person miraculously possessed an extra card, he had an incomparable advantage over others. For this reason, unscrupulous selfish types exercised their ingenuity to obtain extra cards. Some apartment house managers in conspiracy with janitors wrote out cards for fictitious people. There were even some instances of forgeries, which in the dimly lit shops passed for authentic cards.

Each ton of food thus drained off weakened the city's defence potential. Besides, it was feared that the Nazis might spread false cards and create chaos in the food distribution system. On October 10, as proposed by the First Secretary of the Regional Party Committee, Andrei A. Zhdanov, the City Executive Committee decided to re-register all ration cards during the week from October 12 to 18.

The re-registration was carried out either at place of residence or employment. Each citizen had to present documents that entitled him to a ration card. The cards were stamped "re-registered". As of October 18, cards without that stamp were invalid. This measure cut down the number of bread tickets by 88,000, fat tickets by 92,000 and meat tickets by 97,000.

A group of executives led by the Chairman of the City Executive Committee, Pyotr Popkov, flew to Novaya Ladoga to speed up deliveries via Lake Ladoga. Several barges were found to be idle because of a shortage of crews. Others were out of order.

The Command of the Ladoga Flotilla came to the rescue: crews were filled out with military transport sailors and the barges repaired by military experts. The volume of food deliveries to Osinovets rose two-and-a-half times: between October 14-20, 5,000 tons of flour, enough for five days, were delivered. Just the same, the supply fell short of requirements.

At the same time as food deliveries via Osinovets were accelerated, another important action was taken. In Gostinopolye, where the loads were trans-shipped from the railway to river barges, vast amounts of food had accumulated. The Germans showed signs of increasing activity in this area and the food stocks were threatened. In six days all the provisions were dispatched to Novaya Ladoga—just in time!

By October 20 barley flour ran out, so the new composition of the bread became: rye 63%, flax-cake 4%, bran 4%, oats 8%, soya 4%, malt 12% and stale grain flour 5%. The taste of the bread worsened—it reeked of mould and malt. Sausages now consisted of 60% horse meat and 40% soya flour.

The Germans were pushing towards Moscow, and early in October Stalin transferred Georgi K. Zhukov to the western front. His post was taken over by General I. I. Fedyuninsky. But after two weeks the latter asked for a transfer and was appointed Commander of the 54th Army in place of Marshal Kulik. This army later played a major role in the breakthrough of the blockade. The post of Leningrad Front Commander went to General I. S. Khozin.

Bombings and shellings continued. Initially, alarms were sounded no matter how few bombers appeared in the sky. People took refuge in the cellars of apartment houses of special shelters and slit trenches, and stayed there sometimes for as long as

six hours, waiting for the all-clear.

This affected production. A decision was taken to refrain from sounding alarms in tbe case of small raids of two or three planes. The workers insisted on carrying on, irrespective of the number of bombers in the air, as long as their particular plant was not in the area under direct bombing. These demands were agreed to. But this meant intensified vigilance on the part of anti-aircraft crews, and our planes patrolled over the city continually.

In a sense, nearly all the inhabitants of Leningrad became combatants. Every night more than 60,000 members of civil defence teams were on duty on rooftops. People, young and old, quickly learned how to smother incendiary bombs, immobilising thousands before they flared up.

On October 13, during a raid, 12,000 incendiary bombs were dropped on the city—twice as many as on September 8. And yet the number of outbreaks of fire was cut to one-quarter. That is what civil defence could achieve.

As soon as an artillery attack began, an announcement was made on the radio informing the population which streets and squares were coming under fire and which side of the street pedestrians should avoid. All traffic ceased in danger zones.

The artillery fire, which often killed people in the streets, was unnerving. But there was no panic. Public institutions kept their usual hours. Stores stayed open from 6 a.m. to 9 p.m. for tbe convenience of shoppers. People arrived at work on time, despite all obstacles.

Artillery fire began at various times, but the enemy preference was for rush hours. This monstrous tactic was directed at mass murder of the population. The only motivation was the Nazis' impotent fury and blind urge to take revenge upon the besieged.

But the murderers did not go unpunished. Soviet artillerymen pinpointed enemy batteries as soon as they opened up, and returned fire. That usually ended the attack. As was later discovered, the Soviet counter-fire destroyed many Nazi gun crews. Then the enemy adopted a new tactic: a few sbots, followed by a quick change of gun positions.

On October 23 six precious bargeloads were caught in a storm on Lake Ladoga. Huge waves tossed the barges around like eggshells, until they were finally rammed ashore far from Osinovets. The already scanty food deliveries from across the lake had to be suspended.

In three days the storm abated somewhat and deliveries were resumed, but the weather remained menacing. Frosts were on the way.

* * *

Worse was yet to come. In the second and concluding instalment of* The Siege of Leningrad, *in next month's issue of SPUTNIK, the author describes the progress of the siege in the most difficult months, to the end of February 1942, and in a concluding summary he tells of the final breaking of the blockade and rout of the Nazi troops in January 1943.

MORE WATER WITH IT?

In recent years the so-called "dehydrated" diet has become popular—a cup of coffee in the morning and a glass of yoghurt before bedtime. But those who adopt it overlook the fact that such a diet can be harmful if it is followed for a long period.

Water constitutes two-thirds of man's body; in new-born babies, 70 per cent; and in adults, 65 per cent. Man can survive for weeks without food—prolonged starvation may be remedial at times—but he cannot last more than a few days without water.

How much is required? Dieticians say a minimum of between four and five pints each day. This can be made up of two pints of tea, coffee and fresh water, one pint of soup, one-and-a-quarter pints of water in solid foods, half to two-thirds of a pint produced in the body itself. This is not a cast-iron rule: the quota given above may vary according to the age, occupation and health of the person concerned and the climate in which he lives.

—From MOSKOVSKAYA PRAVDA

THE POWER OF DARKNESS

Soviet scientists have discovered that if plants are protected from light they can survive in frosts. For example, the leaves of a cucumber plant can stand a temperature of 35.6°F. only in darkness. Overheated plants can also recover in darkness.

Apparently when photosynthesis stops, light energy becomes excessive and ruins cells and tissues; then darkness is the plant's only hope.

—From the newspaper KOMSOMOLETS KIRGHIZII

WANDERING NEEDLE

Thirty years ago Mrs. Plotnikov, a housewife of Kremennaya (Ukraine), was wringing out the washing when she suddenly felt a searing pain as a needle pierced her left thumb. When she tried to pull it out, it broke off. By the time she had made up her mind to go to the doctor, the needle had completely disappeared.

Domestic responsibilities intervened and she forgot about the needle. But every now and again over the years it gave her a reminder—now in a finger, now in the back and once it felt as though it must be right in her heart.

Not long ago Mrs. Plotnikov felt a pain in her heel. She took off her shoe and there, sticking out of her skin, was the end of the needle that had stuck in her thumb 30 years earlier. An elementary surgical operation got rid of it for good.

—From the newspaper TRUD

SURGEON OPERATES ON HIMSELF

from the newspaper VECHERNY KIEV

One day last December the telephone rang in the office of Professor Nikolai Novikov, head of an orthopaedics and traumatology clinic in Kiev (Ukraine).

It was a call from the village of Tyrnovo, to tell him that his services were badly needed by a patient with a splintered leg fracture.

Professor Novikov went there with all speed and operated. He stayed in the village overnight and next morning, as soon as he had satisfied himself that the patient would be all right, he set out on the journey back to Kiev. There was an appalling snowstorm raging, but the professor had to give a lecture later in the day.

Just outside Kiev the car came to a halt in a snowdrift. The professor got out and pushed, then felt a searing pain in his knee.

"Torn meniscus," he diagnosed. He examined the knee on reaching Kiev, and realised he needed an operation. He decided to do it himself.

First he injected an anaesthetic into the bone. But bone is very different from skin, having, as the anatomists put it, the strength of marble and the density of oak. So it was by no means easy to drive the needle of the novocaine-filled syringe into it—he had to use a surgeon's hammer.

After the soft tissues had been cut through and the knee joint opened, he reached the torn medial meniscus and removed it. He examined the wound and ran his fingers slowly about the joint, to see if there was anything else amiss, and then the operation entered its final phase. Professor Novikov washed the joint cavity with novocaine and sutured the wound.

This is the story of what was perhaps the first such knee operation, in which one man doubled the roles of surgeon and patient.

While he was busy with his scalpel, the professor kept up a running commentary to his colleagues and students on each stage of the operation, and on his own sensations. These were far from pleasant. Sometimes he would grit his teeth with pain, and for an instant he was dizzy with novocaine.

Although observers told us the professor had done a brilliant job, we decided not to write about it until time, the most unbiased of judges, fully confirmed the success of the operation.

What was Professor Novikov's aim in operating on himself? He said, "The operation could, of course, have been done by any of my colleagues. But I wanted to test on myself the effectiveness of the intra-osseous anaesthetic in order to discover its weaknesses and to know the feelings of our patients.

"Such tests have great value, as they enable us to improve our operating techniques."

Polenov's sunny palette

A story of Vassili Polenov (1844-1927)

by SERGEI GOLITSIN

Outwardly Polenov was a lucky man, and yet there was a point in his life when he was on the verge of committing suicide.

He was born into a well-to-do family. His father was a State Councillor, a general in the civil service. Vassili Polenov received an excellent education: he had tutors, attended a high school, then the law school of St. Petersburg University, and finally enrolled at the Academy of Arts. In 1871 he graduated from the Academy with a gold medal diploma, and was sent abroad to continue his artistic education.

Polenov did not have to wait long for recognition as a painter: four years after graduation he was elected member of the Academy for his "Arrest of a Huguenot". Every one of Polenov's later works found a prominent place at art exhibitions. His fame grew.

The success of his "Moscow Backyard", exhibited in 1878, was sensational. Tbe painter had not imagined for a moment tbat his picture might be acclaimed as an outstanding work of art.

Polenov sent it to an exhibition sponsored by the artist Ivan Kramskoi, with the covering note: "Unfortunately, I did not have time to paint anything more significant, though I wanted to bave something decent on show. Hope to make up for the time lost for art in future. In this picture of mine I have painted a Moscow backyard in early summer."

"Grandmother's Orchard"

The first feeling his contemporaries experienced on seeing the picture was one of joyous recognition. They had all seen that yard somewhere, or something very much like it.

. . . A sunny day in early summer. A deep-blue noonday sky with white puffs of clouds here and there. Patches of grass speckled with white-and-yellow daisies. At the far end, beyond a barn, looms a white church, its golden onion-shaped cupolas gleaming in the sun . . . .

What strikes one most, however, is the play of light and shadow. The shadows in the picture are not dark and sombre, but transparent, even colourful. They emphasise the brightness of the sunlight, the blue of the sky, the green of the grass, the white of the mansion and the church, and convey an impression of airiness and space.

The picture introduced a new quality in the Russian art of painting—what the French call *plein air*. It was in connection with this picture that the term "intimate landscape" was first used.

Vassili Polenov had been 14 years old when Alexander Ivanov* brought his "Christ Appearing to the Multitude" over from Italy. It had taken the famous artist 30 years to paint his huge canvas. Young Polenov spent many days at the Academy of Arts where the picture was on view. He set a small easel in

*See article on Ivanov in June, 1968, issue of SPUTNIK.

Library at the Polenov Museum

front of it and copied various details, trying to imitate the master. The boy dreamed that he would also work as hard as Alexander Ivanov and create a work of similar magnitude.

He retained this ambition in his adult years. The theme he chose, also from the Gospel, was "Christ and the Adulteress". He made the first sketch of the picture in 1867, when he was in the fourth year at the Academy, and completed it 20 years later, when he was 43.

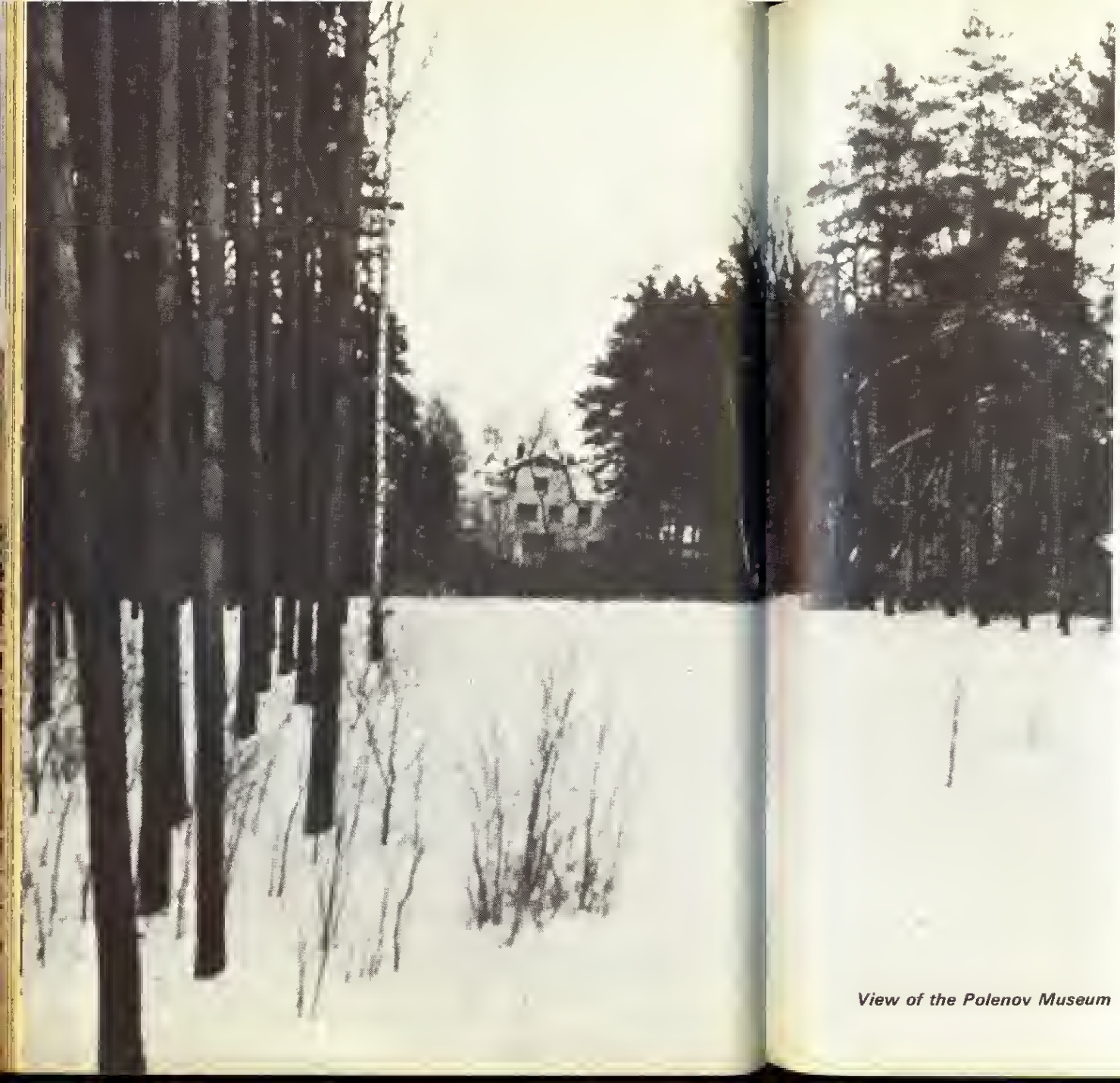
Polenov's study

He had chosen the story of Christ and the adulteress because it gave him an opportunity to expose bigotry and hypocrisy. The picture was a triumph for the painter—financially. Czar Alexander III bought it for 30,000 roubles.

But it was not a success artistically. Polenov noticed with anxiety that viewers were first astounded by the huge size of the canvas, and then impressed by the authentic

Continued on Page 171

"Lake Tiveriada"



View of the Polenov Museum

architecture of the temple, the blue expanse of the sky, the genuine landscape of sunny Palestine; but they paid scant attention to Jesus and his Disciples. The philosophical content evaded the public.

The painter realised that his life-cause was lost: his picture did not get anywhere near Ivanov's "Christ Appearing to the Multitude", did not become its logical follow-up. It was then that Polenov contemplated suicide.

During the latter years of his life, Polenov drew up an "Artistic Testament", in which he listed and described in detail his pictures of the evangelical cycle and his written work on philosophy and the Gospels. He did not even mention his landscapes.

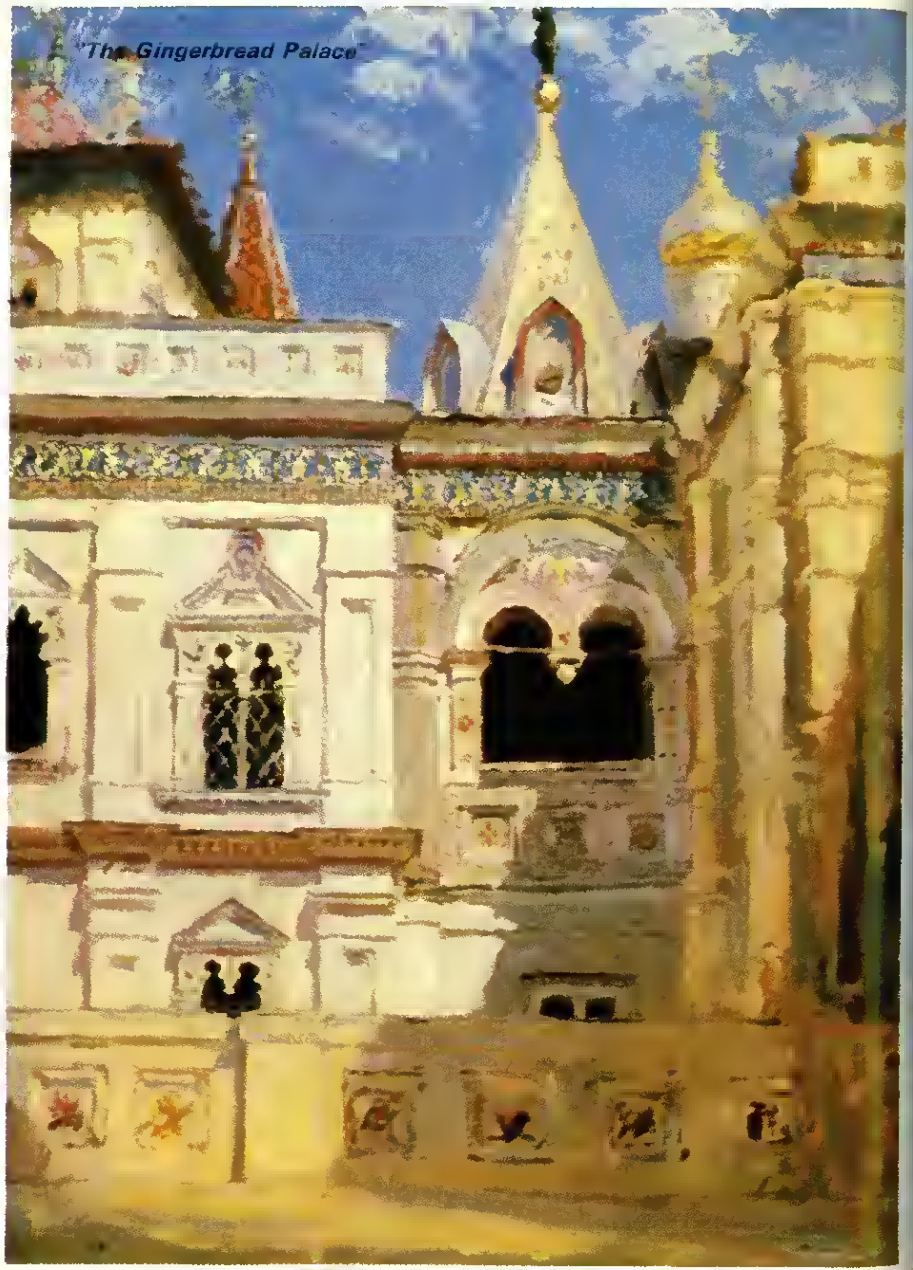
Polenov, who loved nature, never suspected that all his life he had shunned his real calling–landscape painting.

★ ★ ★

Polenov was 73 years old when the Revolution of October 1917 shook Russia. Although he was not in the least associated with the people who prepared the Revolution, he welcomed it. He wrote to his wife in 1917, "Am all for the Bolsheviks and their decree of an immediate peace . . . ."

In 1924 the Soviet Government awarded Polenov, on his 80th birthday, the title of People's Artist, the

Continued on Page 176



"The Gingerbread Palace"

"Moscow Backyard"


"The Old Pond"

highest distinction in the field of art.

In the early 1890's Polenov had bought an estate near the town of Tarusa, on the River Oka, not far from Moscow. There are many places in those parts poetically described by the late writer, Konstantin Paustovsky. Polenov built a house on the estate, which he intended to become a museum open to all.

He had planned the house himself –a large, practical, unadorned building. He called it "Scandinavian style", but actually it was a style all his own. It is a three-storey wooden structure, stuccoed and whitewashed, with many balconies and glassed verandas. The many windows are all different sizes–from very small to very large–and asymmetrically placed.

Four rooms on the ground floor housed a museum, curios collected by five generations of Polenovs. The exhibits included all sorts of things, from a picture acquired by Polenov's great-grandfather and painted by a seventeenth-century artist of the Flemish school, to bones of a mammoth which Polenov's son Mitya, found on the Oka bank.

After the artist's death, his family handed over the house with its many articles of artistic value and interest to the State.

Paintings by Polenov's friends–I. Repin, V. Vasnetsov, I. Shishkin and other great artists–are now displayed in the Vassili Polenov Museum. There is also a large collection of applied Russian folk art acquired by Polenov's sister, and curios collected by the artist himself during his travels in Europe and Africa.

Fireplace in the library at the Polenov Museum

RUSSIAN FOR YOU

УРО́К ВТОРО́Й *LESSON TWO*

This is the second in our new series of lessons designed to increase your knowledge of colloquial Russian.

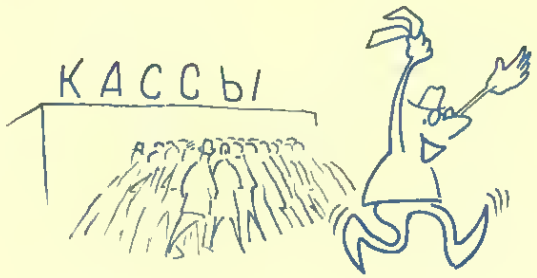
The short passages below can be read with the help of a dictionary, and the colloquial expressions are explained in the notes at the end.

This month's lesson is all about football.

ДЕНЬ НА СТАДИОНЕ

1 Вратарь — Goal-keeper
2, 3 Защитник — Full-back
5 Центральный защитник — Centre-half
4, 6 Полузащитник — Half-back
7, 8, 10, 11 Нападающий — Forward
9 Центральный нападающий — Centre-forward

Са́мые популя́рные ви́ды спо́рта в Сове́тском Союзе бесспо́рно футбо́л и хоккей. В э́том легко́ мо́жет убеди́ться вся́кий. Для э́того доста́точно подъе́хать к Дворцу́ спо́рта зимо́й и́ли к Большо́й спорти́вной аре́не Центра́льного стадио́на ле́том за день до ма́тча ме́жду наибо́лее изве́стными кома́ндами. Проби́ться к биле́тным ка́ссам о́чень тру́дно из-за огро́мных очереде́й жа́ждущих попа́сть[1]) на матч.



Други́м ве́рным показа́телем популя́рности хоккея́ и футбо́ла слу́жат мальчи́шки: загля́нешь в любо́й моско́вский двор и уви́дишь мно́жество ма́леньких старши́новых и фи́рсовых, гоня́ющих ша́йбу[2]) зимо́й; ле́том они́ превраща́ются в я́шиных и шестернёвых[3]).

Футбо́л и́здавна по́льзуется успе́хом в Росси́и — ещё до револю́ции бы́ли организо́ваны пе́рвые кома́нды. Но, пожа́луй, по́длинно ма́ссовую популя́рность э́тот игровой́ вид спо́рта на́чал приобрета́ть в тридца́тые го́ды. Изве́стно, что успе́х всегда́ спосо́бствует привлече́нию зри́телей; гро́мкие побе́ды[4]) неизме́нно уси́ливают прито́к жела́ющих как игра́ть, так и посмотре́ть игру́. Именно поэ́тому мно́гие скло́нны счита́ть побе́ды моско́вской кома́нды «Дина́мо», оде́ржанные в 1946 году́ на ро́дине футбо́ла в А́нглии, причи́ной, обеспе́чившей футбо́лу в СССР зва́ние «спо́рта но́мер оди́н».

Что каса́ется хоккея́, то э́тот вид спо́рта впервы́е появи́лся в СССР лишь по́сле войны́. Но за коро́ткий срок сове́тские ры́цари ледо́вых сраже́ний[5]) суме́ли доби́ться таки́х великоле́пных успе́хов — семь раз завоёвывали зва́ние чемпио́нов ми́ра — что хоккейная лихора́дка[6]) ста́ла таки́м же типи́чным атрибу́том зимы́, как футбо́льная — ле́та.

Хва́тит, одна́ко, исто́рии.

Я хочу́ рассказа́ть о том, как мне довело́сь побыва́ть на футбо́льном ма́тче двух популя́рных столи́чных кома́нд «Спартака́» и «Торпе́до».

Зна́я о нра́вах москвичей́, я пое́хал на стадио́н за час до нача́ла игры́ — ду́мал таки́м о́бразом избежа́ть толчей́ и да́вки[7]). Но чем бли́же к стадио́ну, тем гу́ще станови́лся пото́к маши́н. В конце́ концо́в, когда́ остава́лось о́коло полкиломе́тра до це́ли, я попроси́л води́теля такси́, в кото́ром я е́хал, останови́ться: я по́нял, что скоре́е дойду́ пешко́м. Води́тель, вздохну́в, сказа́л:

— Везёт же не́которым![8])

На по́дступах к стадио́ну бы́ло черны́м-черно́ от люде́й[9]), и пока́ я пробира́лся за высо́кие чугу́нные воро́та, я уста́л отвеча́ть «нет» на оди́н и тот же вопро́с: «У вас ли́шний биле́т е́сть?» или «У вас нет ли́шнего биле́та?»*)

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* Обратите внимание на различную конструкцию одного и того же вопроса. По-английски первый переводится так: "Do you have a spare ticket?" Второй: "You wouldn't have a spare ticket, would you?"

К моме́нту нача́ла ма́тча стоты́сячный ова́л стадио́на был так забит, что не́где бы́ло .я́блоку упа́сть[10]).

Но вот на зелёное по́ле вы́бежали игроки́ обе́их кома́нд: спарта́ковцы в кра́сных футбо́лках и бе́лых труса́х, торпе́довцы — во всём бе́лом. Стадио́н взорва́лся аплодисме́нтами[11]), кри́ками, сви́стом: так боле́льщики[12]) приве́тствовали свои́х люби́мцев[13]).

Игра́ начала́сь. Буква́льно на второ́й мину́те один из спарта́ковцев, соверши́в краси́вый рыво́к по пра́вому кра́ю, наве́сил[14]) мяч на штрафну́ю площа́дку «Торпе́до». Капита́н «Спартака́» Галимзя́н Хуса́инов при́нял мяч на грудь[15]), сбро́сил себе́ на но́гу[16]) и неотрази́мо проби́л[17]) в «девя́тку»[18]): оди́н-ноль.

Что тут бы́ло![19]) Каза́лось, стадио́н разва́лится от невообрази́мого гва́лта.

Сиде́вший ря́дом со мной мужчи́на воспри́нял гол «Спартака́» с удиви́тельным споко́йствием.

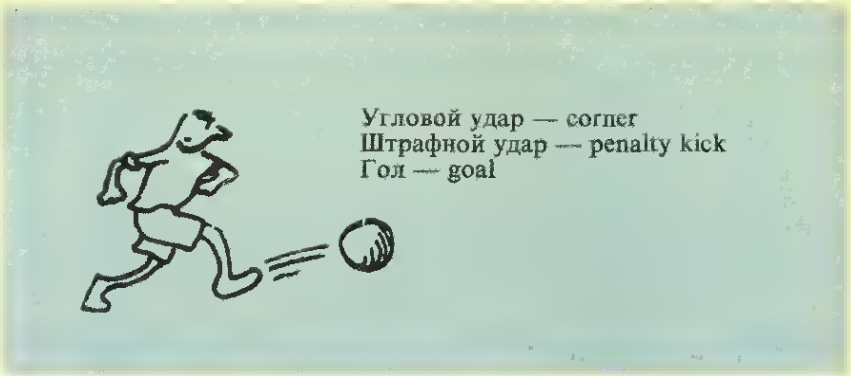
— Это ничего́ не зна́чит, — сказа́л он, обраща́ясь неизве́стно к кому́. — Хоть я и боле́ю за «Спарта́к»[20]), а всё равно́ он ля́жет[21]) сего́дня.

— Как так[22]) ля́жет? — спроси́л я.

— А вот так, — невозмути́мо отве́тил он. — Не све́тит ему́[23]); да не́кому держа́ть[24]) Стрельцо́ва.

Я бы́ло усомни́лся в проро́честве моего́ сосе́да, но дальне́йший ход игры́ показа́л, что он — знато́к футбо́ла.

К середи́не пе́рвого та́йма Стрельцо́в получи́л пас ме́трах в пятна́дцати[25]) от воро́т спарта́ковцев. Изя́щным финто́м[26]) обведя́ двух защи́тников, он ворва́лся в штрафну́ю и сильне́йшим уда́ром сквита́л гол[27]).



Со счётом оди́н-оди́н кома́нды ушли́ на о́тдых[28]).

Второ́й та́йм прошёл под зна́ком я́вного преиму́щества автозаводцев[29]). Четы́режды их ме́ткие уда́ры заставля́ли футболи́стов в кра́сно-бе́лом начина́ть с це́нтра по́ля[30]). На́до сказа́ть, счёт мог бы быть ещё бо́лее кру́пным: «Спарта́к» ча́сто прибега́л к недозво́ленным приёмам[31]), причём одна́жды снёс[32]) торпе́довца в преде́лах свое́й штрафно́й площа́дки. Как изве́стно, за э́то даётся одиннадцатиметровый[33]), но судья́[34]) почему́-то воздержа́лся от э́той ме́ры наказа́ния. Боле́льщики не преми́нули вы́сказаться по э́тому по́воду[35]):

— Судью́ на мы́ло![36])

— С по́ля![37])

Со счётом пя́ть-оди́н в по́льзу «Торпе́до» зако́нчилась э́та встре́ча ли́деров ро́зыгрыша пе́рвенства страны́[38]).

КУРЬЁЗНЫЕ СЛУ́ЧАИ ИЗ ПРА́КТИКИ ВРАТАРЕ́Й

Бори́с Рази́нский, кото́рый в пятидеся́тых года́х был вратарём сбо́рной кома́нды СССР по футбо́лу[39]), обладал сильне́йшим уда́ром[40]).

Кро́ме того́, он был хоро́шим спри́нтером. Благодаря́ пе́рвому ка́честву, ему́ ча́сто поруча́ли одиннадцатиметро́вые уда́ры. Второ́е его́ ка́чество — бы́стрый бег — проявля́лось в тех слу́чаях, когда́ вратарю́ проти́вника удава́лось отби́ть мяч: Рази́нский на преде́льной ско́рости мча́лся че́рез всё по́ле обра́тно к свои́м воро́там.

* * *

Не́ктор Ерма́сов, врата́рь одно́й из кома́нд второ́й ли́ги[41]), счита́лся о́чень перспекти́вным игроко́м: ему́ про́чили большо́е бу́дущее[42]). Гла́вным его́ ка́чеством бы́ло удиви́тельное хладнокро́вие. Одна́жды во вре́мя игры́ Ерма́сов в краси́вом броске́[43]) взял труднейший мяч[44]). Трибу́ны восто́рженно зааплоди́ровали, а Ерма́сов, как всегда́ флегмати́чно, разбежа́лся и уда́рил по мячу́, что́бы посла́ть его́ в по́ле[45]). Мяч, одна́ко, попа́л в спи́ну защи́тника и . . . влете́л в воро́та Ерма́сова. С того́ дня врата́рь ста́л не́рвным, неуве́ренным, а вско́ре и совсе́м переста́л игра́ть в футбо́л.

* * *

«Лу́чший врата́рь ми́ра» — так называ́ют Льва́ Я́шина, бессме́нного стра́жа воро́т кома́нды моско́вского «Дина́мо» и сбо́рной СССР. Любопы́тно, что дебю́т э́того просла́вленного спортсме́на на́чался с катастро́фы: он пропусти́л мяч[46]), проби́тый[47]) вратарём проти́вника.

EXPLANATORY NOTES

1) To get to.
2) (Lit.) Chase the puck.
3) Starshinov, Firsov are Soviet hockey stars.
   Yashin, Shesternyov are top football players.
4) (Lit.) Loud victories, triumphs (not very common).
5) (Lit.) Knights of ice battles (often has a humorous connotation).
6) Hockey fever (newspaper cliché).
7) The two words are often used together when describing a dense crowd.
8) Some have all the luck (colloq.).
9) Full of people; swarms of people (colloq.).
10) (Lit.) No room for an apple to fall. Jammed, packed.
11) (Lit.) To explode with applause (newspaper cliché).
12) Fans (colloq.).
13) Favourites.

14) From навес — awning, something that hangs over. Here, a looping pass (sports term).
15) Took the ball on his chest (sports term).
16) Dropped it to his foot (sports term).
17) Kick shot. «Пробить» is a specifically soccer term. It is used in the same sense as «ударить».
18) The upper left- or right-hand corner of the goal (very colloq.).
19) Pandemonium broke loose.
20) I'm a Spartak fan (colloq.).
21) . . . will get a beating (very colloq.).
22) How so?
23) Roughly the equivalent of "They haven't a snowball's hope in hell."
24) To guard (sports, colloq.).
25) The construction, в пятиадцати метрах от . . . means "exactly fifteen metres from". This way it is "some fifteen metres from".
26) Feint, a feigned or false attack.
27) Evened up the score.
28) (Lit.) Went off to rest, went off for half-time.
29) The Moscow "Torpedo" team represents a large car factory — автомобильный завод — hence the abbreviation.
30) To go back to centre-field (i.e. after a goal).
31) Foul play.
32) Tripped. (Lit.) Knocked out.
33) Penalty kick. Colloquial abbreviation of the term «одиннадцатиметровый удар».
34) Referee.
35) The fans did not hesitate to voice their opinions (the phrase «не пременули» has a humorous connotation).
36) (Lit.) "Make soap out of him!" (very colloq.).
37) (Lit.) "Off the field!", take him out of the game (very colloq.).
38) Country championship tournament.
39) USSR national football team.
40) Was known for his extremely powerful kick.
41) Second league.
42) Predicted a big future.
43) (Lit.) Beautiful jump (sports term).
44) Caught the ball and saved the goal.
45) To kick the ball into the field.
46) (Lit.) Missed the ball.
47) Kicked by . . .

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